NEW

HISTORY OF ALCHEMY

From the mysteries of the ancients to the science of today

Revealed
Secrets of the Philosopher's Stone

COULD THEY REALLY TURN LEAD INTO GOLD?

FROM THE MAKERS OF ALL ABOUT HISTORY

Digital Edition

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FIRST EDITION

DECODE THEIR SYMBOLS • THE GREAT WORK • ELIXIRS

WELCOME TO HISTORY OF ALCHEMY

For an apparently defunct subject, alchemy has had a vast impact on the modern world. On one hand, its spiritual theories have been informing religious thought since the 3rd century, culminating in the overwhelming influence they've had on the reconstructed esoteric and magical movements of today. On the other, its relentless curiosity, specialist equipment and experimental methodology made it the early crucible of many of the sciences, notably chemistry, but also physics and pharmacology. Despite science's understandable reluctance to acknowledge it, alchemical ideas have, directly or indirectly, led to breakthroughs in the understanding of gravity, electromagnetism, atomic theory, medicine and even quantum mechanics. Now, as modern academics put its illusive, elusive language under the microscope, they're discovering that alchemy, far from being the bumbling precursor to science or alternative philosophy for religious refuseniks that it has been painted as since the mid-18th century, in fact tied together a complex web of intellectual connections and cultural exchanges between a vast range of subjects, both arcane and mundane.

In this bookazine you'll discover alchemical traditions from around the world, from ancient Indian and Chinese sources to the unique mix of influences that saw western alchemy begin in the Egyptian city of Alexandria. You'll trace its roots from here to the height of the Islamic Golden Age and onwards, find out how and why Europe went wild for this complex, powerful and mysterious knowledge, and explore how some of early science's finest minds were also practicing alchemists, the effect that this had on their theories and discoveries, and the effect that alchemy had on both science and philosophy throughout the centuries and onwards to today.

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Secrets of the alchemists

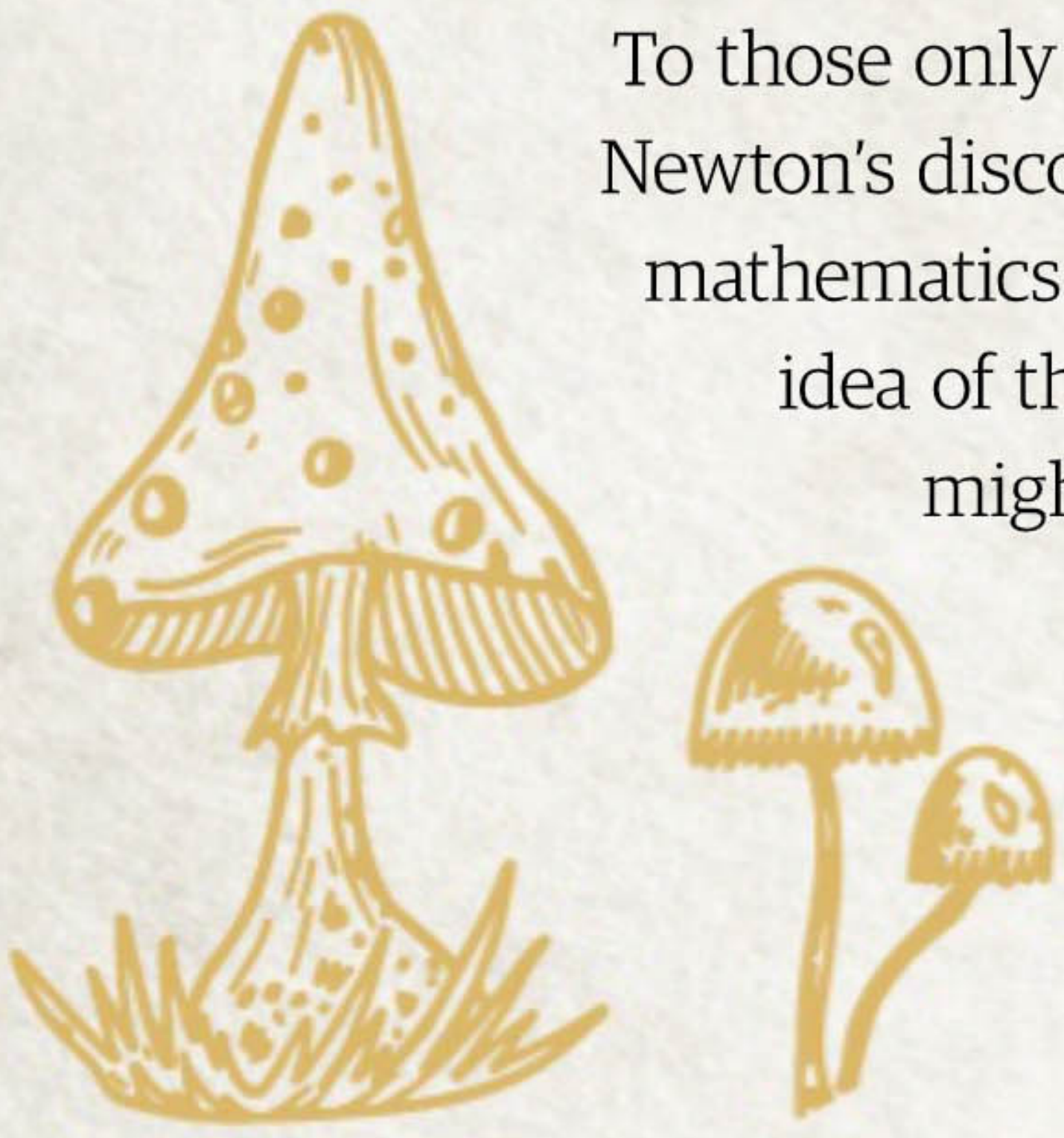
Alchemists tried to find the ancient recipe for making gold and achieving immortality. None succeeded, yet modern science owes much to their techniques

Written by Erich B Anderson

In 1666, renowned English mathematician, astronomer and natural philosopher, Sir Isaac Newton, observed light entering a prism, and from this experience he made a brilliant discovery about light and colour; that white light is made up of a spectrum of several colours. He was fascinated with light, and believed that it had a close relationship to the concept that the early modern scientist knew as 'the vegetable spirit', which was an idea that Newton coined.

Newton was constantly awed by the beauty and complexity of nature. Over time, he concluded that the massive variety of life and processes that occur in nature, such as growth and decay, meant there must be some driving force making it all happen. He believed that the 'vegetable spirit' was that force, and he thought it might be linked with the power of light.

To those only familiar with Newton's discoveries in mathematics and physics, the idea of the 'vegetable spirit' might seem strange, and even pseudo-scientific. On the other hand, this idea and several others of the famous scientist were closely associated with a subject that he is not very often known for studying, and yet spent a great amount of his time devoted to: alchemy. In his lifetime, Newton wrote around one million words on alchemy, which shows how committed he was to the practice. Through his research into alchemy, Newton hoped to uncover the secret of the 'vegetable spirit', or the spirit of life.



Even to Newton in the 17th century, alchemy was an archaic art with hundreds of texts available for him to study. But Newton was not the first person to turn to alchemy in order to find what he was looking for, and was in fact one of the last in a long line of alchemists who sought to use the art for the purpose of discovering the universe's remarkable secrets.

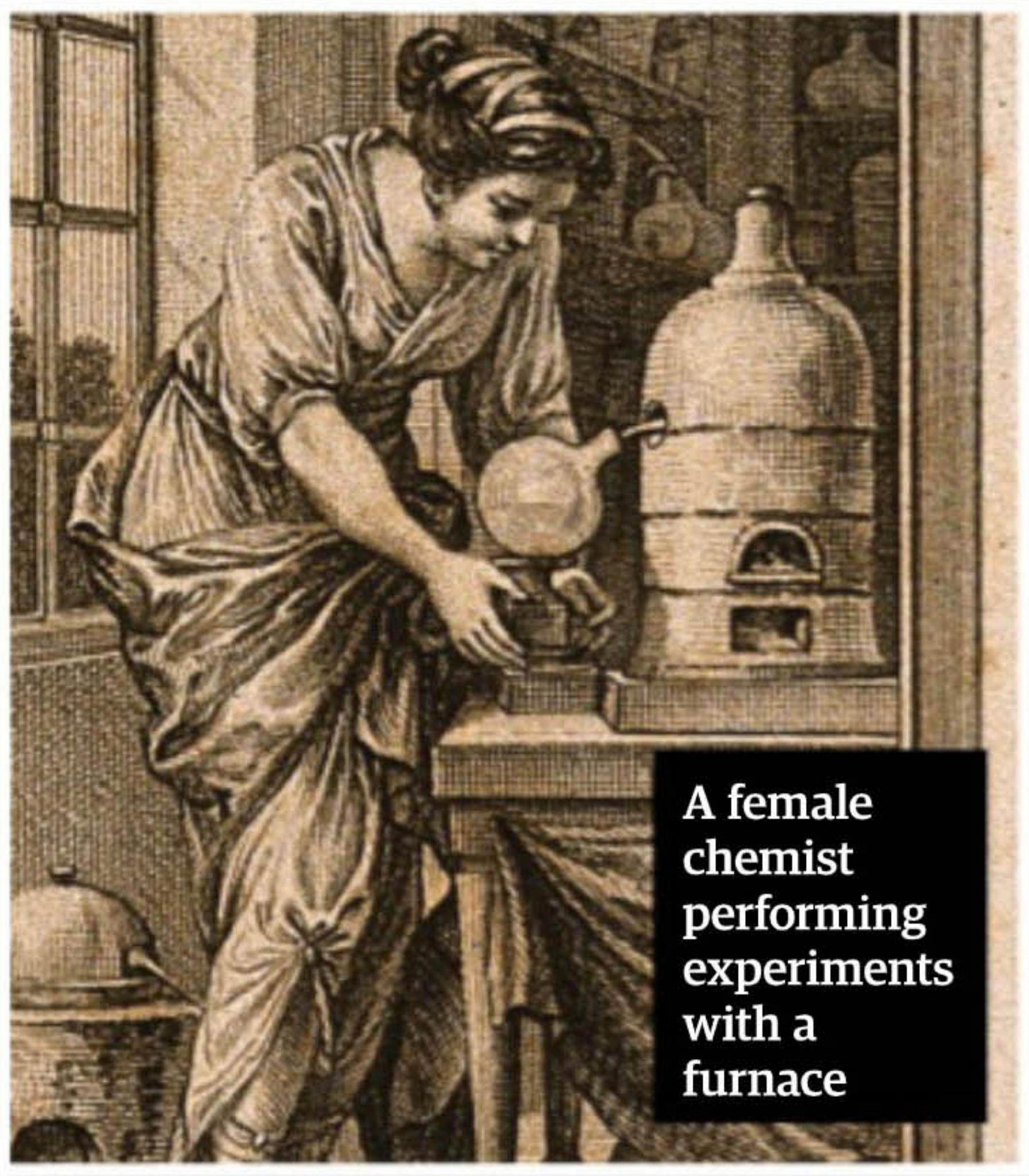
The primary mission of ancient and Medieval alchemists was finding the way to create gold and the elixir of life. Unfortunately for them and Newton, alchemy has been shrouded in secrets and mystery throughout its existence, particularly during the Medieval period. Alchemists have repeatedly defended this secrecy, stating that its purpose is to keep the spectacular knowledge hidden from unworthy individuals who might use it for nefarious gains (though today we might suspect that the true reason for the secrecy is that, from the very beginning, the goals of the alchemists were impossible to achieve).

The origins of alchemy can be traced back 2,000 years before Newton to the ancient Egyptians and Greeks. In fact, the word 'alchemy' may be derived from Khem, which was an Ancient Greek term for Egypt. Even though alchemical tradition often states that the founding father of the practice was Hermes Trismegistus, it is very difficult to tie the root of alchemy to one person. On the other hand, it is much more likely that the first proto-alchemists were Egyptian metalworkers, who would have worked with several different types of metal. It was gold that had the most value, therefore many focused their attention on this precious metal. Dyers and medicine-makers were also linked to early alchemy.

Over time, the experience of working with gold, silver and other metals led the most talented craftsmen to develop impressive alloys. Eventually, many different types of 'gold' entered the market, with major economic consequences as the manipulated metals and alloys were not in fact gold, but convincing fakes. By the time the Romans controlled Egypt, counterfeit gold had become such a problem for the imperial treasury that the Roman Emperor Diocletian (reigning between 284-305 CE) ordered the destruction of every single text

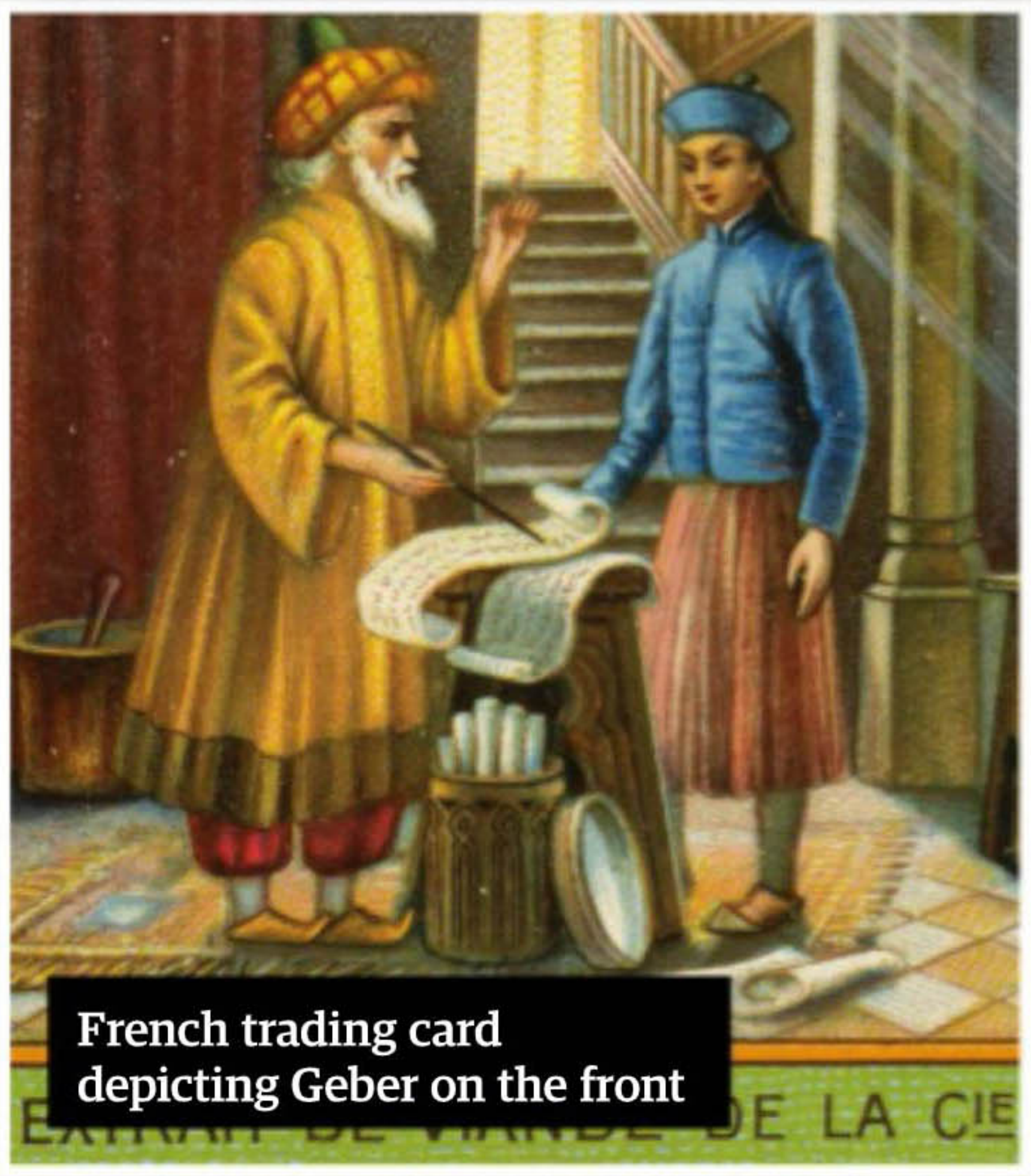
Image from a 12th century manuscript from Baghdad, showing a sage holding an alchemical tablet

> “The origins of alchemy can be traced back 2,000 years before Newton to the ancient Egyptians and Greeks”



A female chemist performing experiments with a furnace

In this painting an alchemist searches for the philosopher's stone



EXTRAIT DE VIANDE DE LA CIE

French trading card depicting Geber on the front

Images source: WIKI

that covered the making of gold or other metalwork.

The Greeks also played an important role in the early development of alchemy. However, these men were philosophers who were more often than not thinkers rather than doers, so their contribution was primarily focused on theories involving the nature of substances. The first known alchemical documents were papyri written in Greek, often including processes and recipes in the creation of gold-like metals and alloys.

The teachings of Aristotle from the 4th century BCE made a profound impact on alchemical thought, as well as other Greek writers both before and after him. Yet it was not until Zosimos of Panopolis, who thrived c.300, that numerous alchemical texts began to emerge, which differed from the earlier papyri. In the writings of Zosimos, the practice of alchemy became less straightforward and more vague. For instance, he began to speak in riddles and used phrases whose meaning is difficult to determine. Zosimos may have been one of the first alchemists to conceal his ideas through secrecy and symbolism, but he started a tradition that later became central to the alchemical world.

After the fall of the Western Roman Empire in the 5th century, the Islamic conquests made the Arabic civilisation one of the chief powers of the world. In this golden age of Islamic culture, Arabic scholars worked diligently to translate earlier Greco-Roman texts and assimilate as much of their ancient knowledge as possible. Especially after Egypt fell under Arabic control, documents that covered alchemy were also discovered and incorporated into the works of the early Islamic scholars. It is often thought that the term ‘alchemy’ was actually created in this period, because it combined the word ‘Khem’ with the Arabic definite article ‘al-’, such as in the words ‘alcohol’ and ‘algebra’. Furthermore, the key to immortality – which was just as important to alchemists as gold creation – is known as the elixir of life, from the Arabic word ‘al-iksir’.

The most prominent Arabic alchemist was Jábir ibn Háyyan, or Geber to western Europeans, of c.760 CE. From the writings of Aristotle, Geber theorised that metals were created from a combination of mercury and sulphur, which became a fundamental aspect of alchemy. After Geber, the physician and philosopher Abu Bakr Muhammad ibn Zakariyya Al-Razi (or

Rasis) dealt with alchemy during the 9th century, followed by Abu Ali ibn Sina (or Avicenna) in the 10th century. Once the works of these men and other Arabic scholars reached the Latin-literate West, interest in alchemy was reignited throughout Medieval Europe.

Albertus Magnus, a Dominican from Swabia, was the primary scholar responsible for reintroducing alchemy to Europe in the 13th century. Albertus supported the mercury-sulphur theory of Geber, and although he believed that transmutation (the changing of matter into another form) was possible, he admitted it was very difficult to do. In 1244-5, Thomas Aquinas became the pupil of Albertus, and the master taught him what he knew, including his knowledge of alchemy. The other major alchemist of the 13th century, Roger Bacon, wrote about two different kinds: practical and theoretical. Bacon praised the first type for he truly believed that, if done right, the processes could improve metals and make them better than the state in which they are found in nature.

Albertus, Bacon and the other prominent alchemists of the era all believed that transmutation could be achieved, especially with metals. However, none of them could prove it. It was during this time that the philosopher's stone began to increasingly appear within alchemical texts. Since transmutation was possible according to the alchemists, many began to believe that they simply lacked one vital ingredient to make the process work, which was the stone. And as the idea of the stone became more popular, so too did the alchemical texts become increasingly more difficult to interpret, as riddles, symbolism and coded language became more and more prevalent.

It is basically impossible to know exactly what the philosopher's stone was, or would have been, because there have been so many different theories written about the substance. Some alchemists believed that the stone was comprised of the old common alchemical ingredients of mercury and sulphur, along with the new addition of salt, but with one major twist; these components were not just simply mercury, sulphur and salt, but rather special substances in a pure state with magical qualities, commonly referred to as the 'essences' of mercury, sulphur and salt.

Two common aspects of alchemy were the transmutation of base metals to noble ones and the search for an elixir of immortality

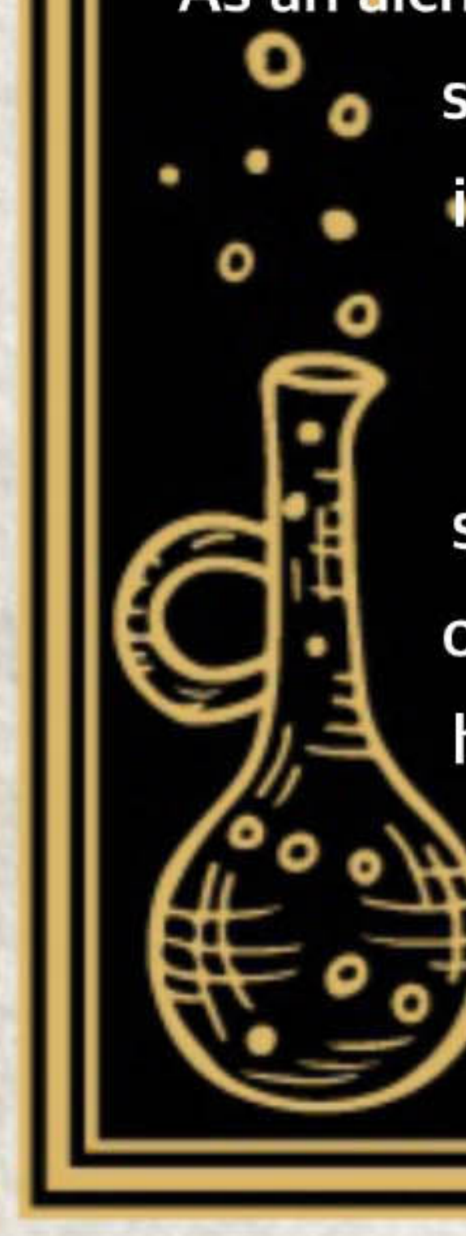
Legendary alchemists

The major figures of alchemy from the ancient world to the Renaissance

Thomas Norton with Abbot Cremer and Basil Valentine

Thomas Norton

Thomas Norton, who lived from c.1433-1513, was the disciple of another famous English alchemist called George Ripley. As an alchemist, Thomas was supposedly successful in creating the elixir of life not once but twice, only to have it stolen from him on both occasions; however, he is most well-known as an alchemist for writing the *Ordinal Of Alchemy.*



15th-century depiction of Hermes Trismegistus

Hermes Trismegistus

Hermes Trismegistus is often considered to be the founder of ancient alchemy. Although he was most likely a mythical figure, he was believed by many to have lived at the same time as Moses. Other theories about his mysterious origins depict him as a god descended from the Greek god known as Hermes. The early 14th century treatise *De Mineralibus*, attributed to Albertus Magnus, is the first Western text to mention him.

Albertus Magnus describing his scientific theories to others

Albertus Magnus

Born at the beginning of the 13th century, Albertus Magnus was a Dominican who was given the title of Doctor Universalis by the Catholic Church, as he was the most prominent scholar of his time in the natural sciences. He was considered to be a theologian, inventor, astrologer and magician, but known to later alchemists as chief expert in alchemy during the early medieval era. Outside of alchemy, Albertus gained fame as the teacher of St Thomas Aquinas.

18th-century portrait engraving of Roger Bacon

Roger Bacon

A Franciscan, Roger Bacon was also the first Englishman of any renown to study and practise alchemy. A contemporary of Albertus, Bacon lived from c.1220-1292 and was known as a magician and miracle-worker, but he was also a major supporter of pure experimentation, and wanted to improve upon the scientific methods of the time. Works attributed to Bacon were some of the first to lead alchemists on the quest for the philosopher's stone.

Depiction of the Arabian alchemist Jábir ibn Háyyan

'Geber' or Jábir ibn Háyyan

Known by Latin speakers of the West as Geber, many works on alchemy were attributed to Jábir ibn Háyyan. It is possible that he lived during the 8th century when the Arabs were discovering and translating ancient Graeco-Roman texts, therefore he contributed to this. His work the *Summa Perfectionis Magisterii* was the primary source of information on chemicals for most of Medieval Europe, but it may have been the work of another alchemist.

There were other theories about the makeup of the stone, too. Similar to Newton's idea of the 'vegetable spirit', some alchemists thought of the philosopher's stone as the seed of gold that could be obtained from the metal. To the Medieval mind, metals were similar to vegetation, in that they both grew in the earth. Therefore, metals had seeds and the most precious seed of all was that of gold.

Regardless of the increasing secrecy surrounding alchemy, hundreds of alchemists from many different backgrounds were desperate to find or manufacture whatever was necessary in order to obtain the philosopher's stone. Since the incredible substance could be used to serve the purpose of creating gold and the elixir of life, some alchemists sought enormous wealth, some desired fame, and others wanted the key to never-ending life, while there were some who had the grand aspirations of flooding the market with so much gold that the economic system would collapse and the world would be turned upside down. There were those who did gain fame or notoriety for their alchemical exploits, yet all of the other dreams were never fulfilled. In the end, the failures of others did not

1910.
Omnia · ab · uno · et · in · unum · omnia ·

The black crow is symbolic of a particular process in alchemy

> "These components were special substances in a pure state with magical qualities"

An alchemical adept carrying the vase of Hermes on which is inscribed "Let us go to seek the nature of the four elements"

Images source: WIKI

Alchemists sought to understand the natural world through experimentation

stop the alchemists, especially at a time when the supposed success stories achieved a legendary status that carried a lot more weight than the numerous average practitioners who simply faded into obscurity over time after years without success.

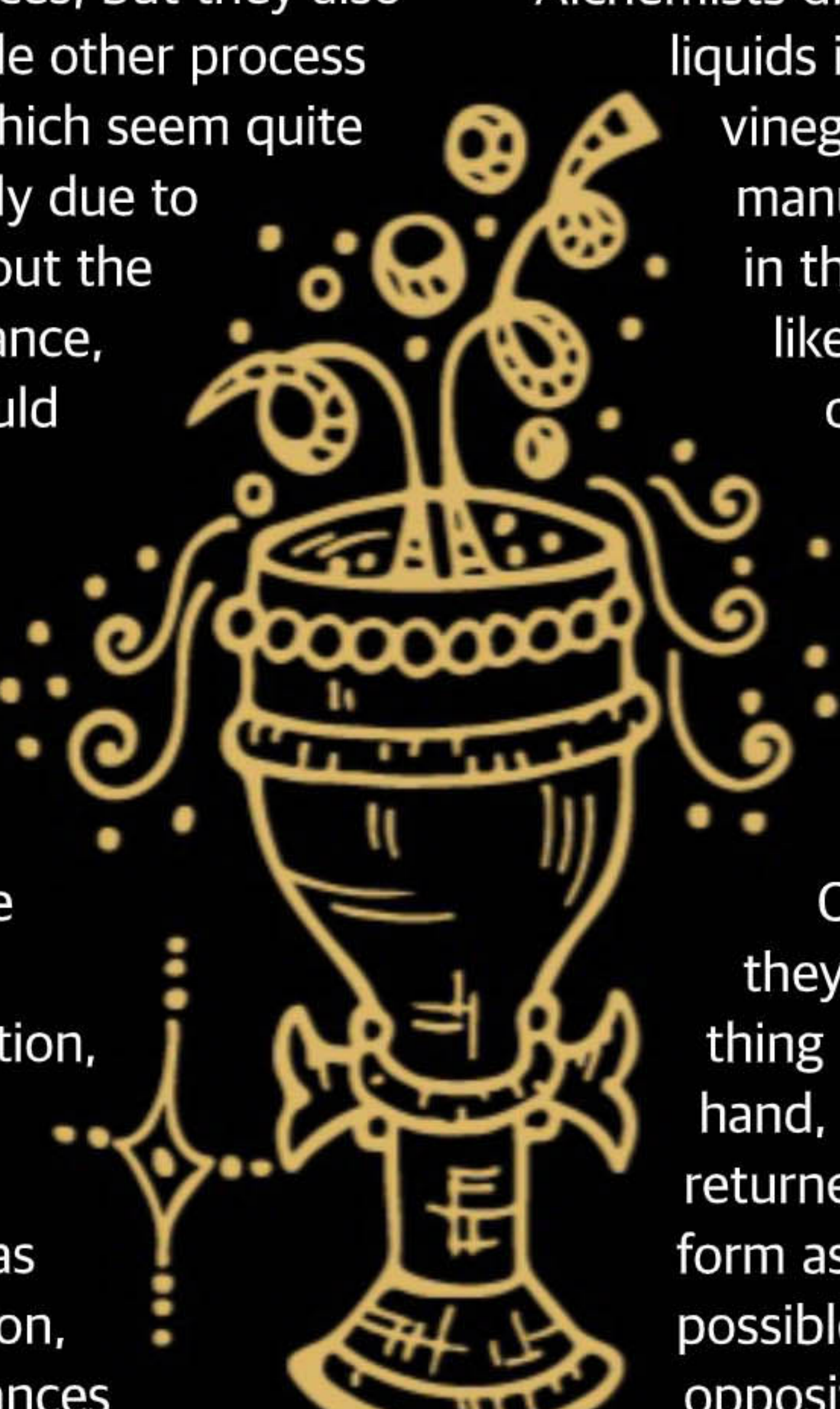
The alchemists who still focused on the quest either attempted to interpret the substantial corpus of texts, or conducted their own experiments in a laboratory. The heating of metals and other substances was a fundamental part of their work; therefore, the furnace was the core to the alchemist's laboratory. This work area was also filled with many different types of utensils, tools and other equipment, such as beakers, crucibles, flasks, phials, jars, pestles and mortars, ladles, strainers and filters. As the alchemists worked hard in order to achieve their impossible goals, they constantly made improvements to the various apparatus that they used. Centuries later, much of this same equipment was incredibly important to the first chemists, and could often be found in their laboratories as well. The inventors of many items of scientific equipment were alchemists.

> "There were those who did gain fame or notoriety for their alchemical exploits"

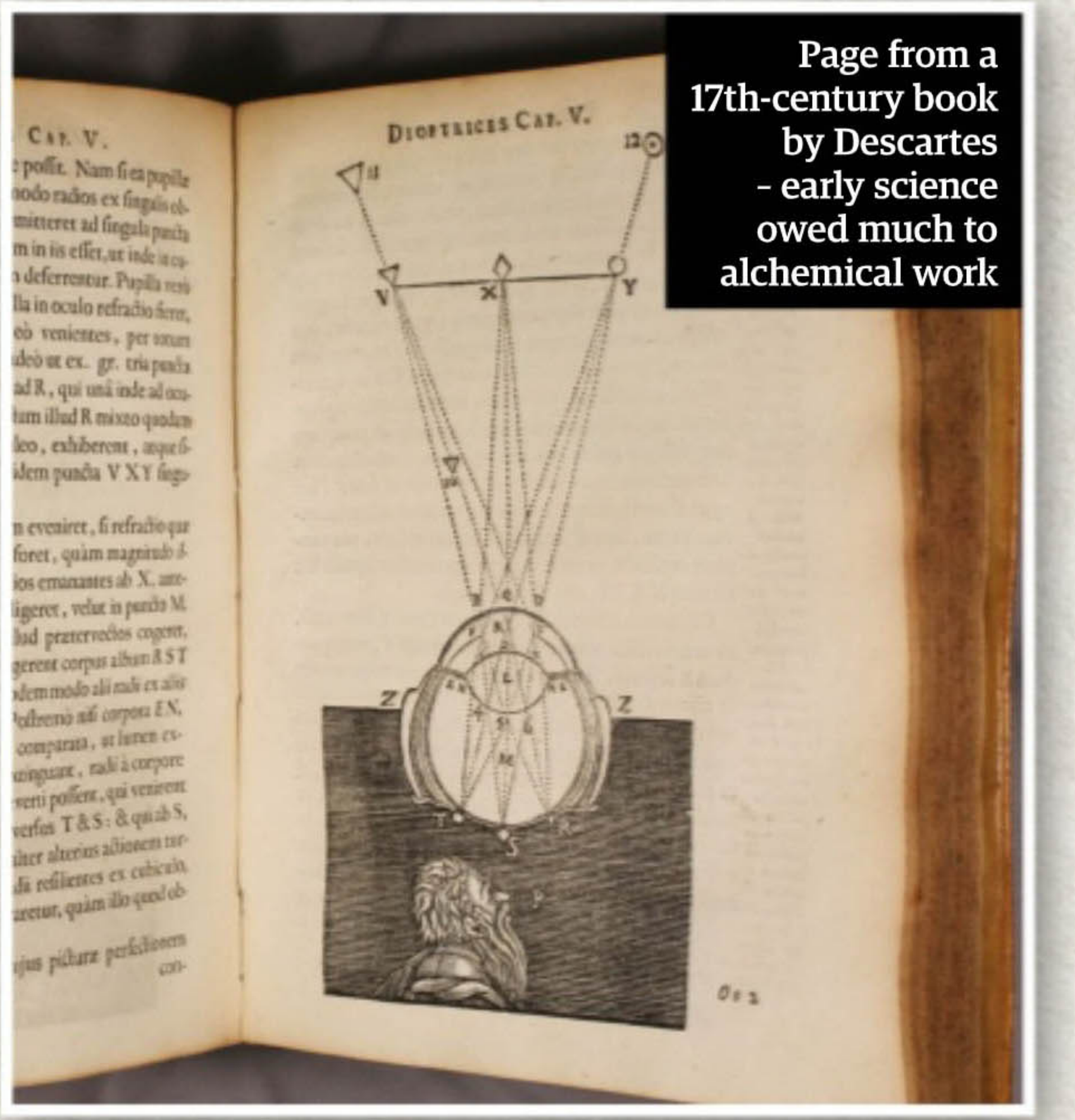
Materials and methods

For the practical alchemists, many different methods and a wide range of equipment were essential

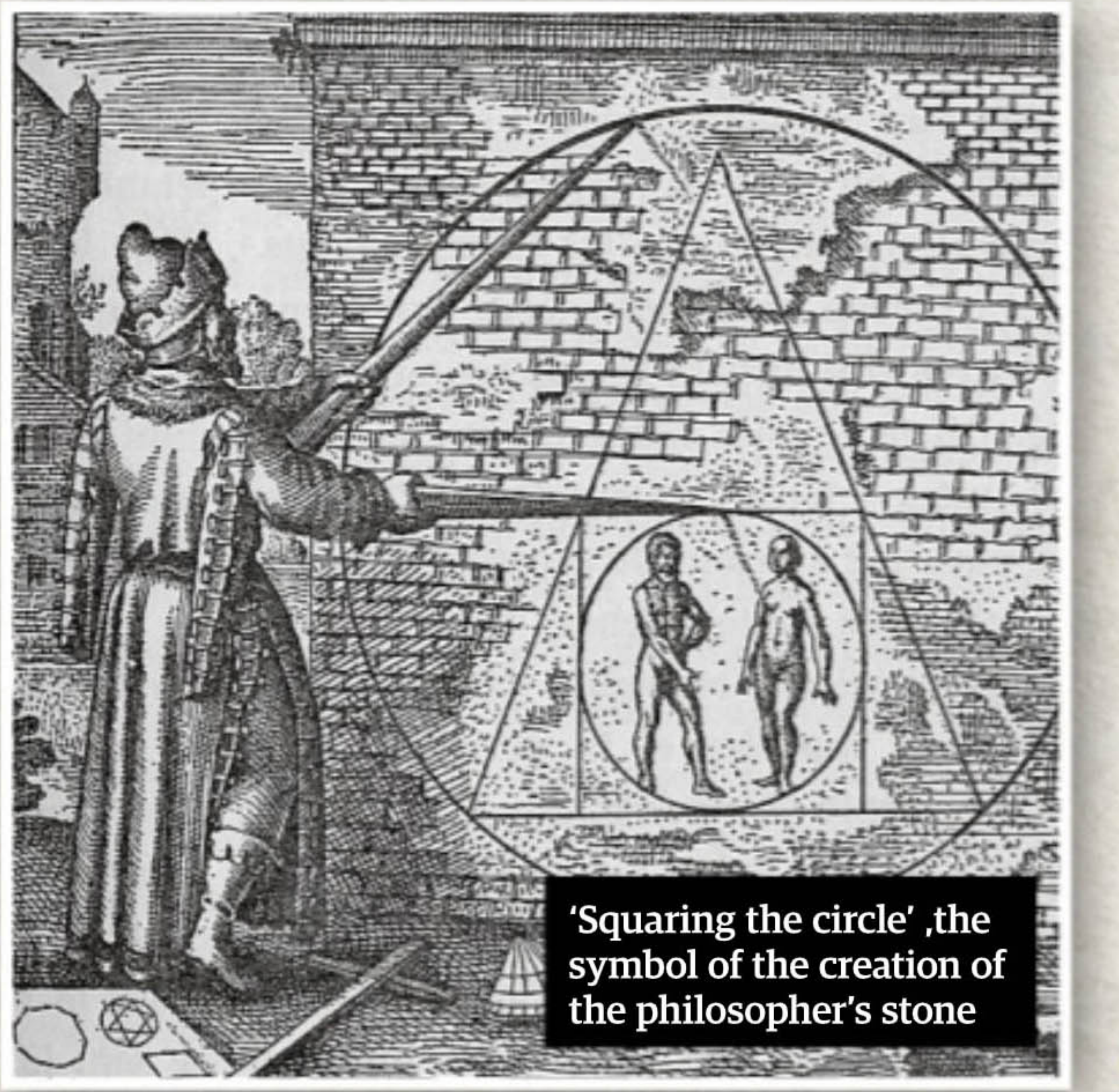
All alchemists frequently used their furnaces to heat metals and other substances, but they also literally tried to test every single other process they could think of, some of which seem quite absurd today. This was primarily due to their lack of understanding about the true nature of metals. For instance, Geber believed that matter could be changed into its perfect form by mixing it with a pure, perfect substance. Essentially, alchemists considered this method as the fermentation of gold by leavening it with base metals in order to achieve their goal. Other common processes used were pulverisation, solidification, distillation, sublimation, mortification and calcination. The furnace fire was used for methods like calcination, which broke down solid substances into powder, but heat was not always utilised. Alchemists distilled many different types of liquids in their experiments, such as vinegar, egg yolks and even horse manure. Acid was also commonly used in the laboratory to dissolve ingredients like silver and mercury. And outside of the laboratory, some alchemists hoped to achieve their goal by exposing their work to the Sun for long periods of time. Alchemists did acknowledge at times that there were limits to what they could accomplish. One example is that experts knew they could not simply change a dead thing into a living thing. On the other hand, alchemists did believe that if they returned the dead item into its original form as simple matter first, it was then possible for it to be changed into its opposite form (that is, living).



This 16th-century illustration from the *Splendor Solis* shows the four colours that appear when working with the ingredients of the philosopher's stone



Page from a 17th-century book by Descartes – early science owed much to alchemical work

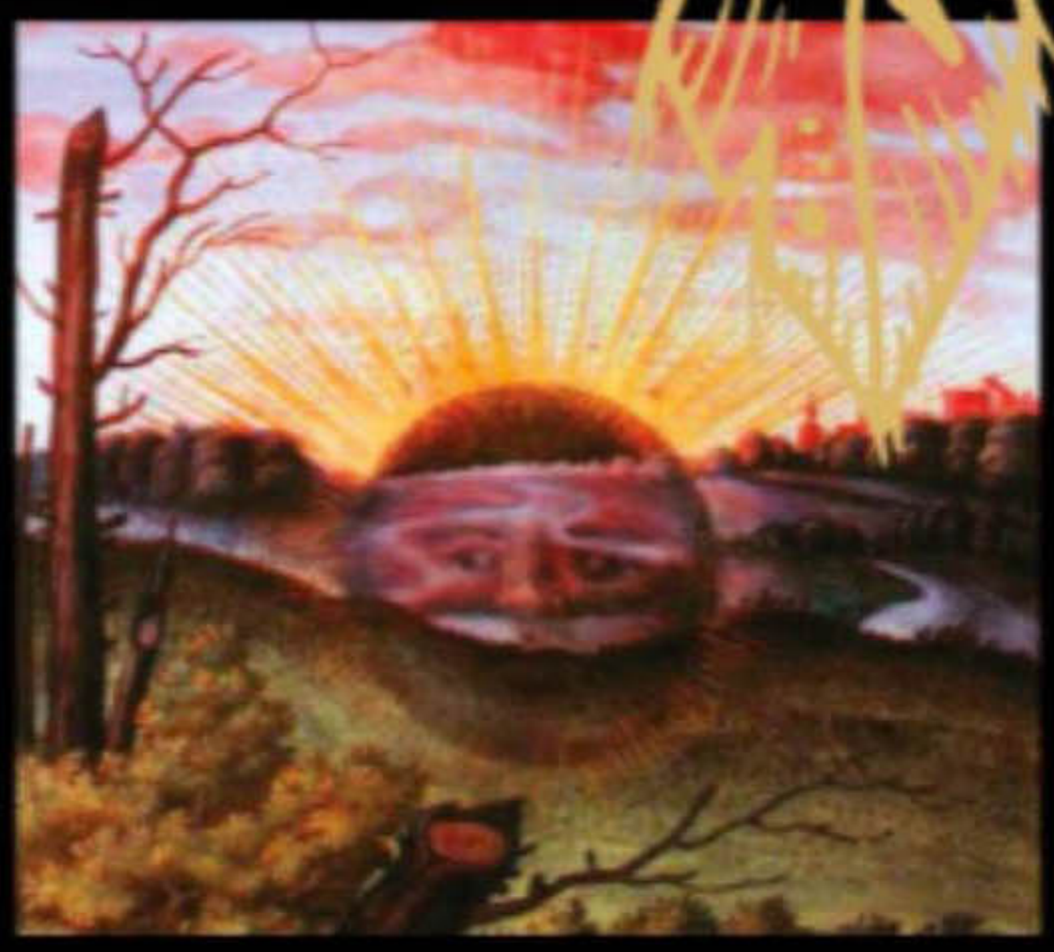


'Squaring the circle' ,the symbol of the creation of the philosopher's stone

Secrets and symbols

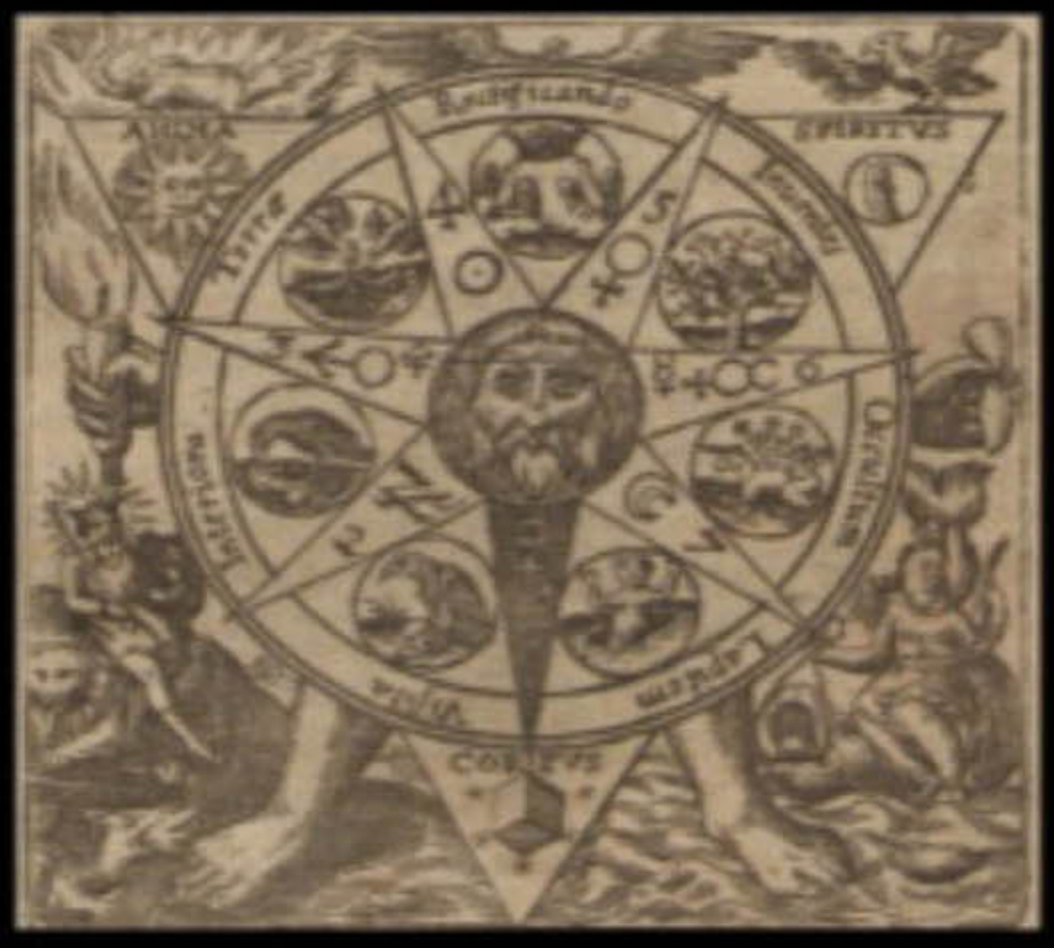
To ensure knowledge was kept from the unworthy, manuscripts were filled with symbols and codes

The Dark Sun



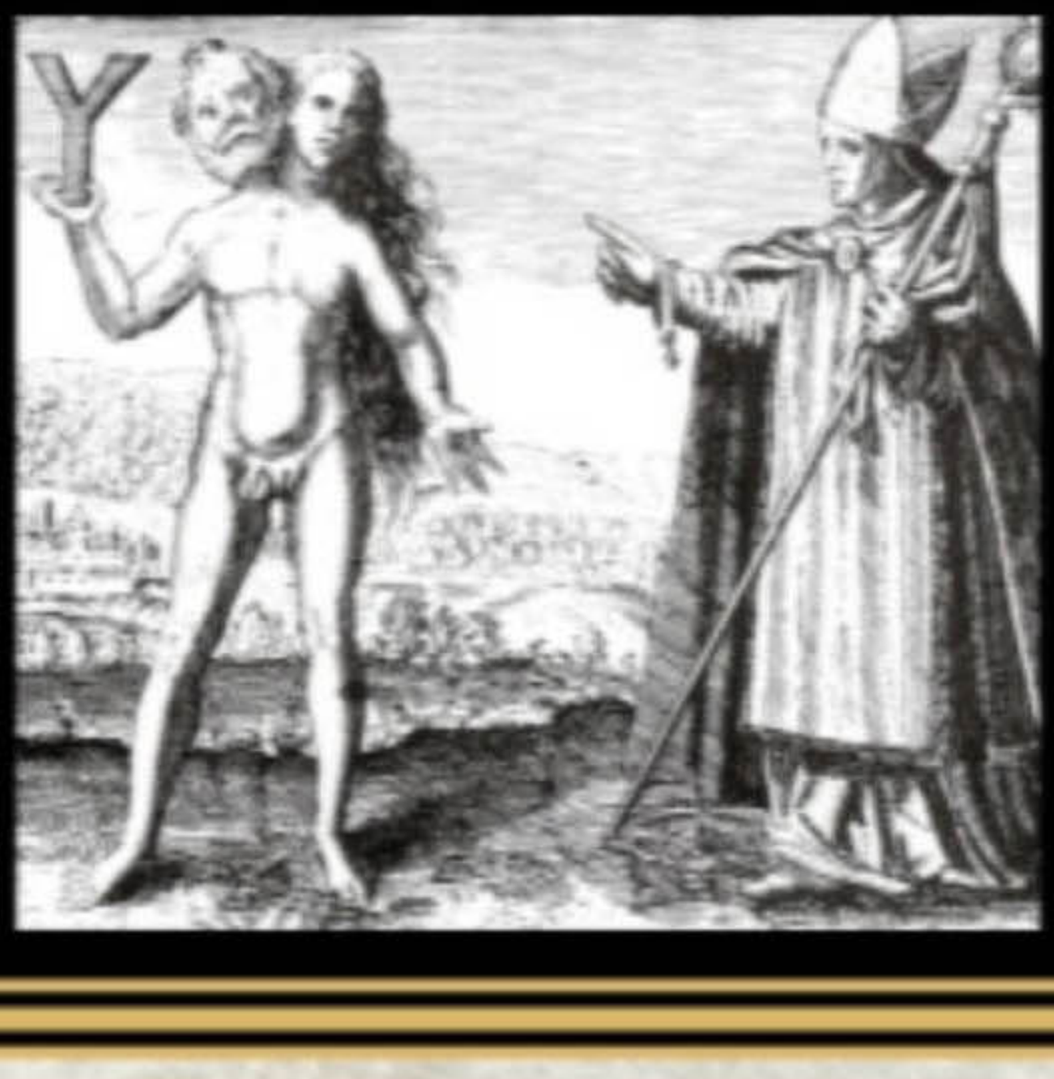
One of the lesser-known alchemical symbols, the Dark Sun, or sol niger, is symbolic of change, essential to the goals of transmutation that alchemists worked towards. It can also be linked to the blackening of matter, or even putrefaction. This image is from the *Splendor Solis*, a 16th-century German book of colourful watercolour images with symbolic significance, relating to alchemical processes and ideas. Though the images date from later in alchemy's Medieval history, their style is reminiscent of much earlier alchemical images.

The Four Elements



This symbolic emblem from the 17th century shows the four key elements – air, water, earth and fire – at its edges. Alchemists believed that if they could master the different aspects of the four elements, they could create whatever they wished to make, including gold and the elixir of life. The triangle within these corners symbolise the 'tria prima' or three primes, which were mercury, sulphur and salt. The alchemist Paracelsus believed that combinations of these three substances made up all metals.

The Great Hermaphrodite



An engraving from the 17th-century work *Symbola Aureae Mensae* by Michael Maier, which depicts Albertus Magnus pointing to the alchemical symbol of the hermaphrodite. The image expresses a common idea found in many alchemical texts that everything has both a uniting, singular nature, but is comprised of two parts. Alchemists believed that harmonisation of these opposing forces (such as wet and dry, Sun and Moon, male and female) could hold the key to the power of creation they sought. The hermaphrodite symbolises this union.

Oil painting of an explosion in an alchemist's laboratory

Alchemy remained very popular and indeed respectable well into the Renaissance, with many other important individuals emerging on the scene, including Arnald of Villanova and Ramon Llull in the 13th century, George Ripley and Thomas Norton in the 15th century, and then Thomas Charnock in the 16th century, to name just a few. However, during the beginning of the early modern era, the art gradually began to lose its prestige.

Advancements in metallurgy that led to the discovery of the true nature of metals was one of the first causes, followed by many other scientific breakthroughs, which over time made so-called pseudo-sciences like alchemy and astrology obsolete. By the 17th century, Newton was at the forefront of this new scientific age, yet even a forward thinker like him used the ancient knowledge of alchemy to uncover the secrets of life. Today, ancient alchemy has a fitting place in history as the crucible of science.

Images source: WIKI

The secret history of alchemy

Alchemists searched for hidden paths to riches and spiritual perfection but for the first time their secrets are being uncovered

Written by Ben Gazur

Alchemical progression

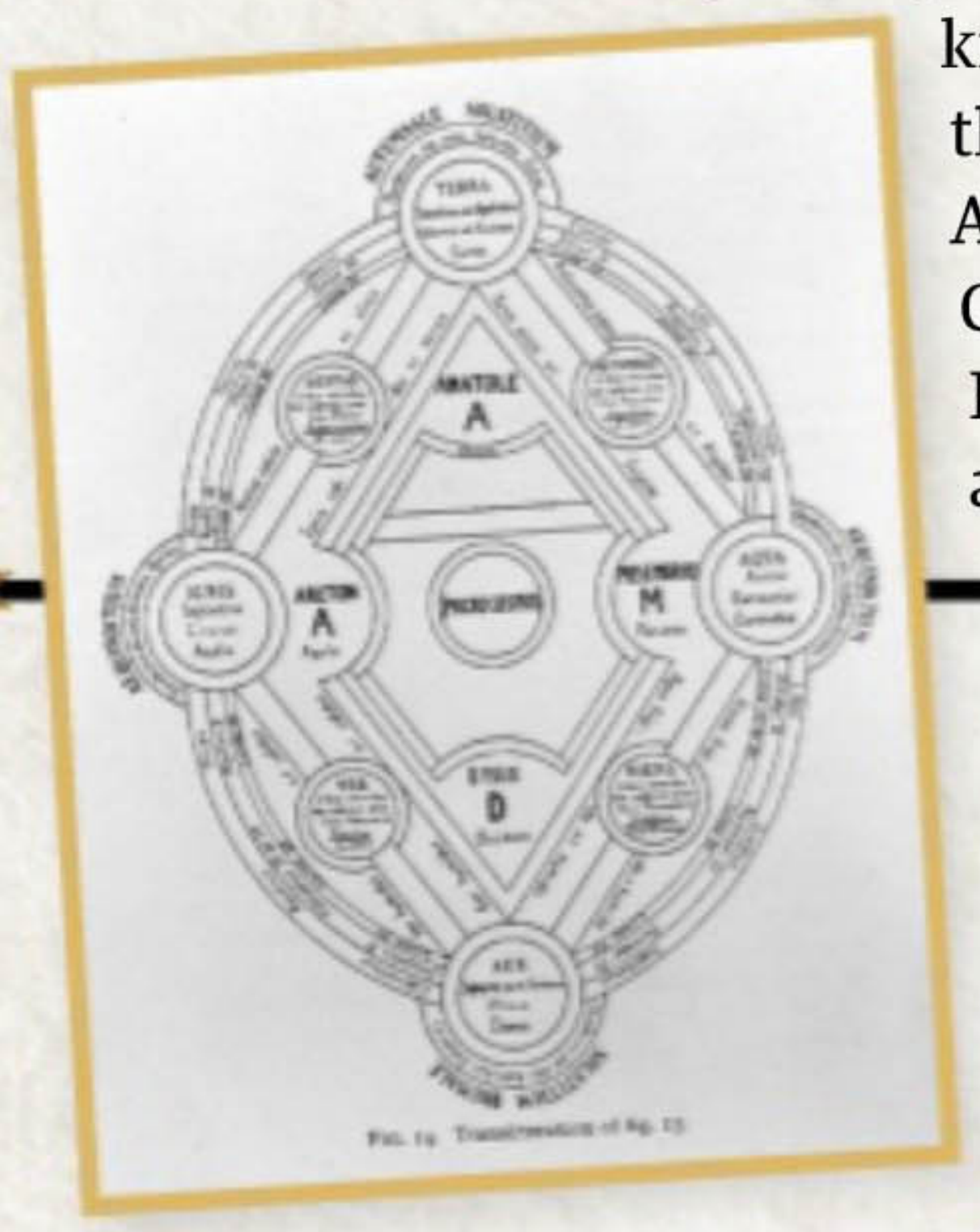
How alchemy and its key ideas evolved as it was practised throughout the centuries and around the world

Defining moment

The elements of matter

Pre-history

Various civilisations came to the realisation that material objects are composed of other substances that can sometimes be drawn out of them as fire can be released from wood. By recombining elements it was thought that any other type of material could be created - if only the right recipe and ratios were known. For the Greeks all things were made of Earth, Air, Fire, Water, and Aether. Chinese thinkers used Fire, Earth, Water, Wood, and Metal.



Mercury is discovered

Metallic mercury was first discovered in India and China around 2000 BCE and has been found in Egyptian tombs from 1500 BCE. Mercury would play a central role in the theories of many alchemists.

~2000 BCE

Immortality pills

In China alchemy was used to search for a medicine that would cause immortality in users. Often these pills were compounded from gold, the noblest of metals, but sometimes contained toxic mercury in deadly amounts.

~300 BCE

Burning the books

After a revolt in Alexandria the emperor Diocletian is said to have ordered all the books of alchemy concerning gold and silver to be burned. This may be related to the currency issues facing the Roman Empire.

297 CE

Zosimus of Panopolis

Zosimus was an Egyptian alchemist and wrote the earliest surviving book on alchemy in the west. His work mixed mysticism with chemical knowledge - a style of writing and thinking that would persist for centuries.

4th century CE

Defining moment

Islamic conquests

630s CE onwards

The arrival of Islam led to the creation of large areas of conquered territory. Within the lands under Muslim control there was a great mixing of knowledge and wisdom from various cultures. The conquest of Egypt brought ancient Greek thought as well as Hellenistic alchemy into contact with practical Muslim ideas. The survival of the works of Aristotle and Plato in Arabic translations gave Muslim scholars a great advantage over those working in the Latin world.

Alchemy, the Noble Art, is an ancient practice that has taken on myriad forms over the centuries. Alchemists of all nations have sought to transform base metals into glittering gold. They have delved into secrets of immortality and tried to create panaceas that would cure any illness. By combining the correct ingredients they believed that they could even create life itself. With mystical insights into the nature of reality alchemists have sought to reshape the world into a more perfect form.

For alchemists the world was alive with spiritual forces that, with the right knowledge and set of tools, could be commanded. Metals lived, could be killed, and be resurrected by masters of the art. From India, to China, to Egypt, to Europe, alchemists could be found hard at work revealing the secrets of the universe. Some of their findings laid the groundwork for the scientific revolution.

Alchemy employed what to us seems like magical thinking yet it led to startling developments in chemistry. Much of the equipment and many of the procedures of the modern scientist were first used in the arcane works of alchemists. From the practical application of alchemy arose spiritual beliefs too. From attempting to 'perfect' metals by turning them into gold many alchemists started to seek ways to perfect the human soul. Whether it is worldly or spiritual wealth the alchemists have something to offer to everyone.

Unfortunately many chose to reveal their wisdom in hermetically cryptic texts. As one said "Where we have spoken openly we have said nothing. But where we have written something in code… we have concealed the truth." Hopefully the articles on the history of alchemy included here will help you to find the way to truth. If not, then perhaps you just need to read a little deeper.

Images source: WIKI; Shutterstock

Many early alchemical techniques and devices paved the way for the scientific revolution

Jabir ibn Hayyan
The Arabic polymath Jabir ibn Hayyan wrote on a huge number of subjects but is best known today as one of the fathers of chemistry. He contributed to many discoveries and placed practical experimentation at the heart of alchemy.
8th century CE

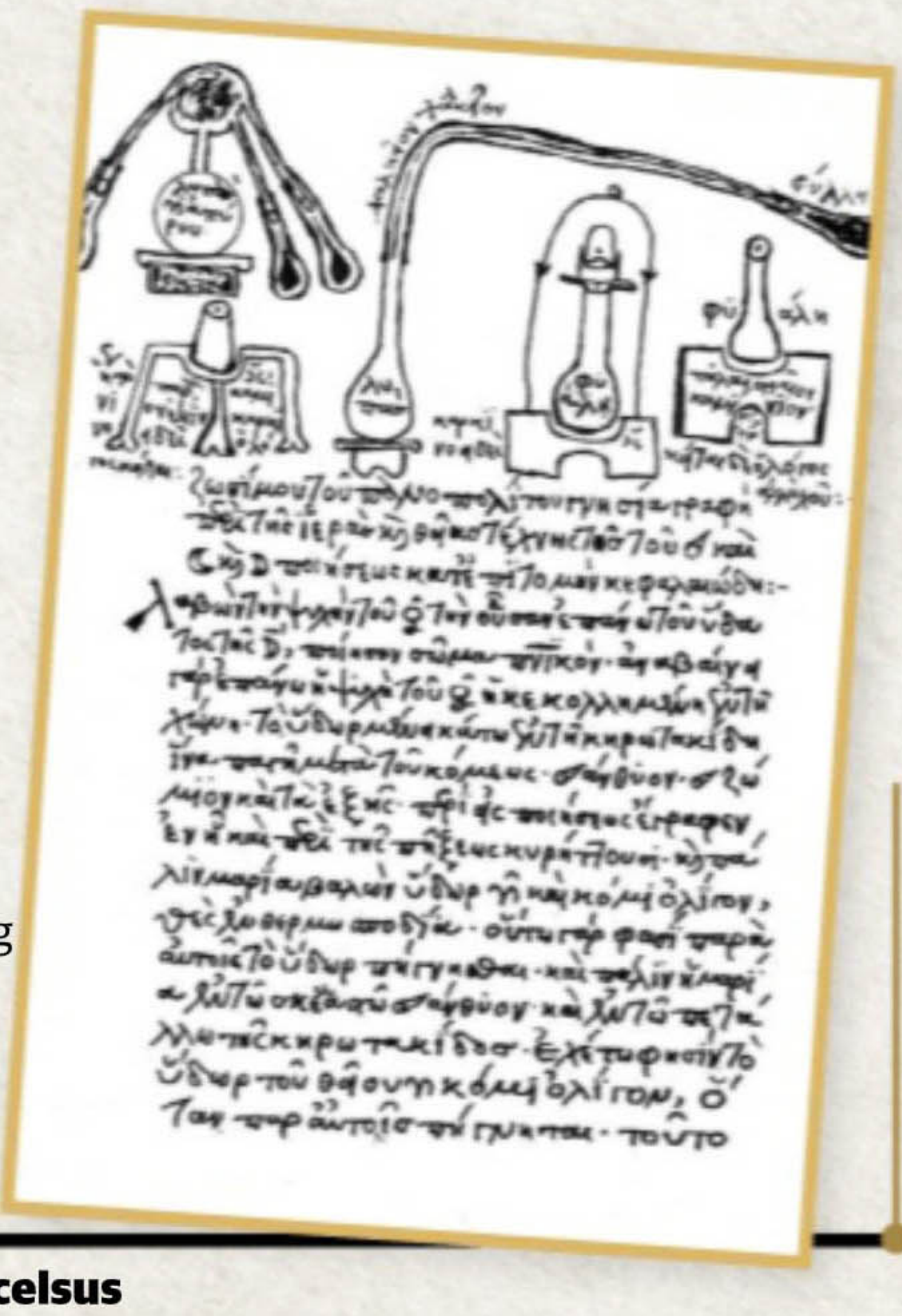
Internal alchemy
Chinese alchemy shifted from Waidan (external alchemy) to Neidan (internal alchemy) that did not seek for immortality in exterior elixirs and recipes but from mystical achievement through meditation.
950 CE onwards

Defining moment

Europe discovers alchemy

1144 CE

In the year 1144 a scholar called Robert of Chester finished translating a work on alchemy from Arabic into Latin. His *Book of the Composition of Alchemy* introduced alchemical thinking into Europe, particularly as it had developed in the Arabic world. As translations of existing texts became available others began creating their own works and attempting to rationalise them with the thinking of Aristotle and the Church.



Paracelsus
Using chemical techniques and thinking from alchemy, Paracelsus made significant strides in medical science. Instead of a magical entity the body was a chemical one, requiring chemical cures. Used mercury as a cure for syphilis.
16th century CE

Isaac Newton – last magician
While Newton is hailed for his incredible scientific achievements he spent a great deal of time working on alchemy. Of his writings nearly a million words were dedicated to the topic of alchemy.
18th century CE

Creating gold in a lab
Using a particle accelerator it is possible to fuse atomic nuclei together. Using bismuth, researchers were finally able to turn a base element into gold – though at a cost far beyond the precious metal produced.
1980

Ancient Chinese alchemy

Chinese alchemists were among the first in the world, and though their ideas spread far and wide, some have remained unique to Chinese tradition

一顆金丹何赫赤
大似彈丸黃似橘
人人分上本圓明
夜夜靈光照神室
龍珠爍爍照崑巔九轉丹成只自然
一粒自從吞入口始知世有活神仙
了見一眞之體

Chinese alchemists used many specialised techniques to attempt to create pills of immortality, but some looked inwards for salvation from death

When the first emperor of unified China, Qin Shi Huang, died in 210 BCE, he was placed in a tomb constructed on a fantastic scale. Alongside the famed Terracotta Warriors he was buried with alchemical secrets. It is said that inside the grave a vast model of the world was constructed with rivers and oceans of mercury flowing like water. Archaeologists have not yet penetrated the interior of the imperial tomb, but readings of mercury in the surrounding soil are far above average, hinting at the liquid metal within. As well as being buried amidst mercury the metal may have been the cause of death of the first emperor. Records show he had an obsession with immortality and one of his plans to achieve it was to have alchemists concoct pills and elixirs that would extend his life forever. Instead it seems that the mercury in the medicines may well have hastened the emperor's departure from the mortal world.

Despite this seeming failure, Chinese alchemy flourished and has had a great deal of influence on western alchemical thought.

WAIDAN – EXTERNAL ALCHEMY

Alchemy in China is based on Taoist thought. Taoism is a philosophical school that teaches its adherents to follow 'the way,' or Tao, of the universe. Emerging in the 4th century BCE, one of the foundational tasks of Taoism was the search for practices that would extend life or bring about immortality. Indeed, legend has it that two of the central figures in Taoism, Zhang Daoling and Laozi, spent time hidden in the mountains attempting to create an elixir of life.

> In Chinese philosophical thought, the concept of alchemy is inextricably bound up with Taoism

The art of creating an elixir, or dan, outside the body was called Waidan by the Chinese. In the earliest periods of Chinese alchemy all searches for immortality and ways of transforming substances were part of Waidan. So widespread did the practice become that in 175 BCE an imperial edict was issued that forbade alchemists to create 'fake' gold on pain of death. Gold being rare in China it was both highly desired and highly valuable. A new and unlimited source of gold would have radically altered the economy.

Not all emperors were averse to having gold on command however. The Emperor Suan hired an alchemist named Liu Tsiang with the duty of creating gold. But the aim was not the gold in itself but the ability of that gold to extend the emperor's life. It was thought that alchemical gold was superior to natural gold because substances created from a variety of materials would have greater harmony within them. By consuming gold created by alchemy a person could take the stronger essence within their body. Liu Tsiang failed, but managed to escape his failure with his life.

With gold being a rarity and long life being so cherished in China it is perhaps understandable that immortality was sought elsewhere. Mercury is an inherently interesting element. A metal that

悠悠覺萬有之空似天雲變滅

攅簇乾坤造化來手搏日月煉成灰

金公無言姹女死黃婆不老猶懷胎

is liquid at room temperature it has many attributes that have drawn the attention of alchemists. For Chinese scholars the mercury-bearing mineral cinnabar was central to their goals.

Cinnabar is a beautiful red mineral and red is highly significant in Chinese symbolism. When roasted the mineral gives off mercury vapour that can be condensed into liquid mercury. Here again there is symbolism as the solid mineral's yang was thought to be perfectly mixed liquid mercury's yin. Unfortunately mercury is not the perfect path to immortality that Chinese alchemists thought. Though she is thought to have found a way to convert mercury to silver, the alchemist Fang was eventually driven mad – one of the side effects of chronic mercury exposure.

The whole enterprise of Waidan alchemy fell out of favour after the Tang dynasty. This may have partly been brought about after various alchemical elixirs led to the deaths and derangements of at least five emperors in a short space of time. Instead focus shifted to the internal search for treasures.

NEIDAN – INTERNAL ALCHEMY

In traditional Chinese medicine there are said to be three treasures: Jing (the essence of living bodies), Qi (the energy of the universe), and Shen (the spirit of the body). Each of these has different roles in the life of an individual and all must be brought into balance if a person is to achieve harmony, and with it immortality.

Jing is the energy that a living thing is born with and it governs their growth and development. When we eat it is our Jing that is being replenished. Qi is the force of the universe and is created by the interplay of yin and yang. Qi flows continuously throughout a healthy body. Shen is the energy of the spirit and mind. By controlling thoughts in meditation one can control Shen. The ideal of Neidan, internal alchemy, is to bring all of these forces into alignment and create peace. In Neidan there is no need for the complex equipment of most alchemists. The human body itself becomes a mixing vessel, known as a ding, wherein all the energies are purified and perfected.

INFLUENCE OF CHINESE ALCHEMY

It is not known for sure when Chinese alchemy first reached Europe and Africa. It seems likely that tales followed the caravans of the trade routes. In Alexandria perhaps they heard stories of life prolonging elixirs and of the hsien – Taoist immortals. The later Jabirian corpus of alchemical texts feature a theory of balance that could well have been imported whole from Chinese theory.

Highly decorated bronze mirrors were used by the Chinese to either focus the rays of the Sun or collect dew falling from the Moon

Sun and Moon mirrors

Mirrors have always been considered magical. Able to reflect the world, often with distortions, a mirror can seem like a pathway to another realm. In ancient China, however, mirrors were fully integrated into not only alchemical practices but the rites of the state.

To create fire from the Sun the ancient Chinese used metal mirrors known as jinsui to focus the heat and light of Sun onto a single spot. Once ignited this 'brilliant fire' from the Sun could then be used to kindle torches used in sacrifices or even to cook rice to be used in rituals. The Sun was considered the ultimate example of yang energy in the universe so fire drawn from the Sun was particularly potent.

Yet yang must always be balanced with yin, and the Moon was the sun's balancing force and therefore full of yin. To draw down yin from the Moon, fire was not needed – it was water the ancient Chinese sought. By placing a bronze Moon-mirror, known as fangzhu, to reflect the Moon at night, water could be collected by condensation. Or directly from the Moon, depending on your point of view. Together Sun and Moon mirrors gave Chinese alchemists access to the great powers of creation.

Chinese alchemists used bronze vessels known as ding to compound their formulae, but others considered the human body itself to be a spiritual ding

Images source: WIKI, Getty

Alchemy from India

Hindu myth may contain some of the earliest references to alchemical secrets, and Indian alchemists left many discoveries for later scientists

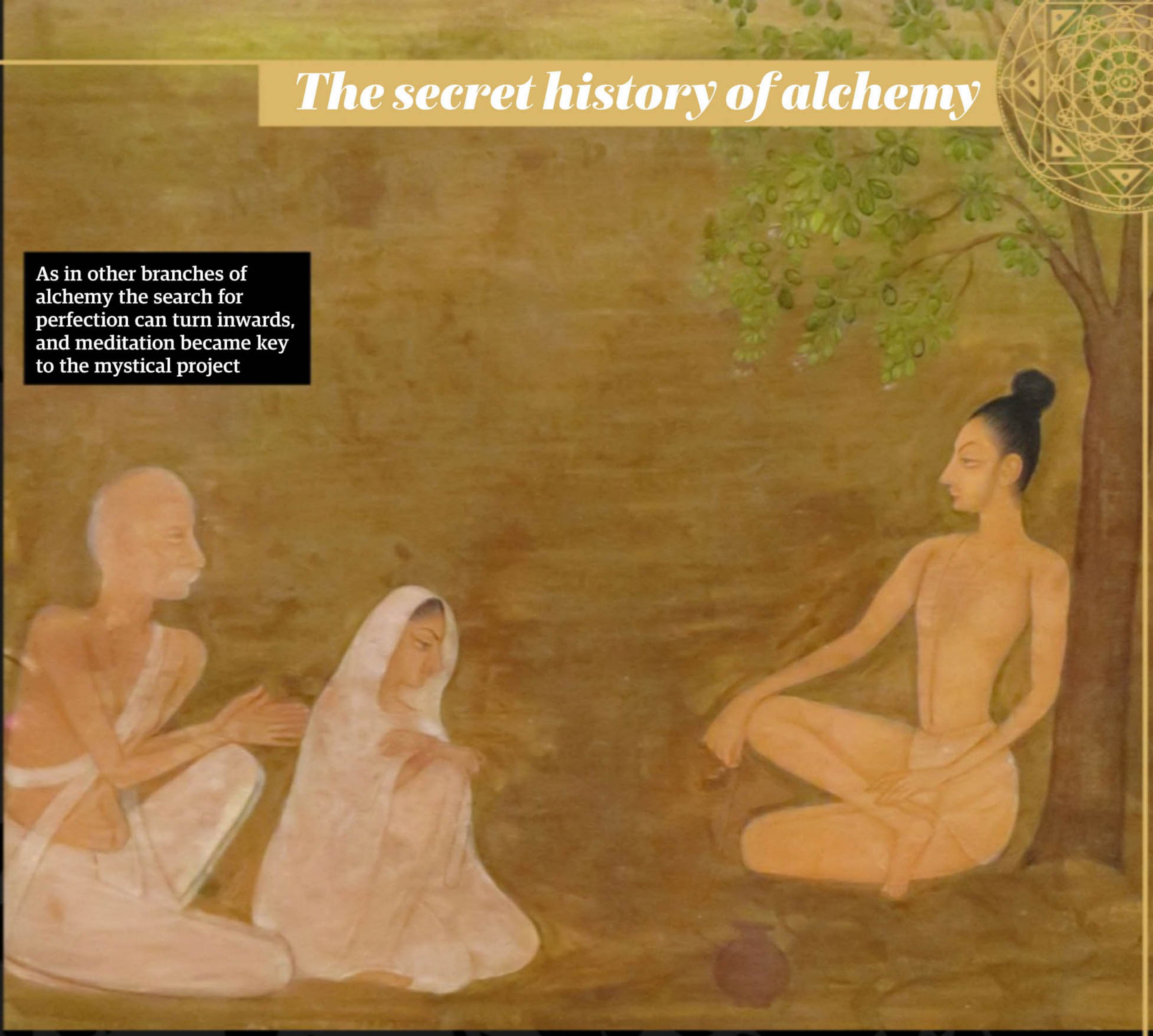
Indian alchemy's fascination with mercury may be why it's one of alchemy's most important substances

It is almost impossible to declare where the origins of alchemy lie, if indeed it was not invented in many places at the same time. Some scholars consider China or Egypt to be the originators of alchemical thought, but there are those who believe India to be the true home of alchemy. India in the ancient world was known for its achievements in metallurgy and the smelting of ores. Bronze and iron emerged relatively early in the region. From the times of the early Indus Valley civilisations, medicines had been compounded from natural products in the hopes of curing diseases. Ayurveda, as this branch of medicine was and is known, gave ancient Indians a large store of materials and substances to work with. In the *Rigveda*, a collection of Hindu hymns that may date from as early as 1700 BCE, we can find praise of a drink known as Soma that can extend life or even grant eternal life. "We have drunk soma and become immortal; we have attained the light." In the *Atharvaveda* mention is made of the power of gold to prolong life. "Whoever wears the Gold of Daksha's children hath a long, lengthened life among the living." We have then in ancient India all of the ingredients that are necessary to call forth alchemy.

RASAYANA – PATH TO ESSENCE

In Sanskrit the word Rasayana literally means 'Path to Essence.' This word has been applied both to the search for long life using Ayurveda medicine

The *Rigveda* of Hinduism mentions a drink called Soma that can grant immortality and may have inspired the search for a potion of eternal life



As in other branches of alchemy the search for perfection can turn inwards, and meditation became key to the mystical project

and to Indian alchemy as a whole. Indian alchemy differs from many of the types found in other cultures because from an early period it abandoned the search for creating gold from base metals. The work known as *Arthashastra* dates from the late 4th century BCE and makes note of several types of gold, one of which is "gold made artificially from mercury". Searching for a way to create an infinite amount of gold would be seen as perfectly reasonable to the ancient Indian mind. The *Charaka Samhita* is a work on Ayurvedic medicine and it lists three desires that humans will always try to achieve: longer lives, material riches, and salvation after death.

One of the methods of transmuting metals occurs in the *Svarna Tantra*. There it is recorded that a substance can be created using various plant products, including that of an oily bulb that grows in water which will dissolve a needle poked into it. Using this oil mercury can be "killed". Using this dead mercury, copper can be converted to gold, while tin will become silver. It seems though that most Indian alchemists simply did not choose to use alchemy to grow rich.

The same tantra reveals what happens to a person who eats the "killed" mercury. The lucky alchemist becomes immortal at once while their urine and faeces will also become powerful alchemical ingredients. Even small amounts of them are able to transmute metals. The ability to create precious metals was however secondary to the spiritual benefits of being purified and made immortal.

A PATH TO HEALTH

Though we have no evidence that anyone managed to become immortal in this way we do know that mineral cures were sought out using alchemical theories. From the 8th century CE onwards many Indian medicines were concocted using inorganic substances. One of these was Kajjali - a sulphide of mercury. Supposedly invented by an alchemist called Nagarjuna in the 10th century this black powder was made by painstakingly grinding mercury and sulphur together for up to 60 hours. When finished this medicine could be used to treat a range of illnesses. One recipe for an elixir also heavily focused on the role of mercury as a curative. "Mercury is to be rubbed with its equal weight of gold and then further admixed with sulphur, borax etc. The mixture is then to be transferred to a crucible and its lid put on, and then submitted to gentle roasting. By partaking of this elixir the devotee acquires a body not liable to decay."

Despite the claims of immortality and good health, alchemy became less and less involved with physical transformations and became more fixed on the spiritual and esoteric changes that could be made inside oneself. Through meditation the self could be made perfect and liberated from this realm of pain and tears.

ALCHEMY'S SUCCESSES

Though bodily immortality remained out of reach for most there were aspects of alchemy that would prove to withstand the test of time. Nagarjuna, who invented the sulphide of mercury as a medical treatment, also listed the equipment he used in his experiments. These ranged from apparatus for distillation to crystallisation, and from fumigation to filtration. Many of the techniques employed by the ancient Indian alchemists would still find a place in a modern laboratory, though some scientists may shudder at the comparison.

Indian alchemy influenced European, Arabic, and Chinese alchemy, and was influenced by them in return. We know of Indian monks who spread Tantric thought, including how to transmute metals, into China. And when Muslim forces invaded India there was a great deal of cultural exchange, which allowed ancient Hindu ideas to be translated into the West.

Raseśvara, mercury and immortality

The unique properties of mercury have made it irresistible to all forms of alchemy. Yet only in India was it praised to such a point that it was worshipped. In some texts the god Shiva says that mercury is his semen, which may explain its link to the divine. The Raseśvara school of philosophy that developed in the 1st century CE held that mercury was the only path to liberation from our human lives and the transmigration of souls.

In the work known as the *Raseśvara-siddhānta* a long list of gods, holy men, and kings is given, and we are told that "These and many others proceed perfected, liberated while alive, having attained to a mercurial body, and therewith identified." Mercury and air were considered the two things required to keep the body alive. Since being enlightened was a mental state, and a mental state requires a body to think with, the body had to be perfectly preserved through the use of mercury.

The Raseśvaras knew of many ways of treating mercury before it was taken. In the end though their desire to apply it to both their blood and body may have led them out of the realm of human existence rather faster than they would have liked.

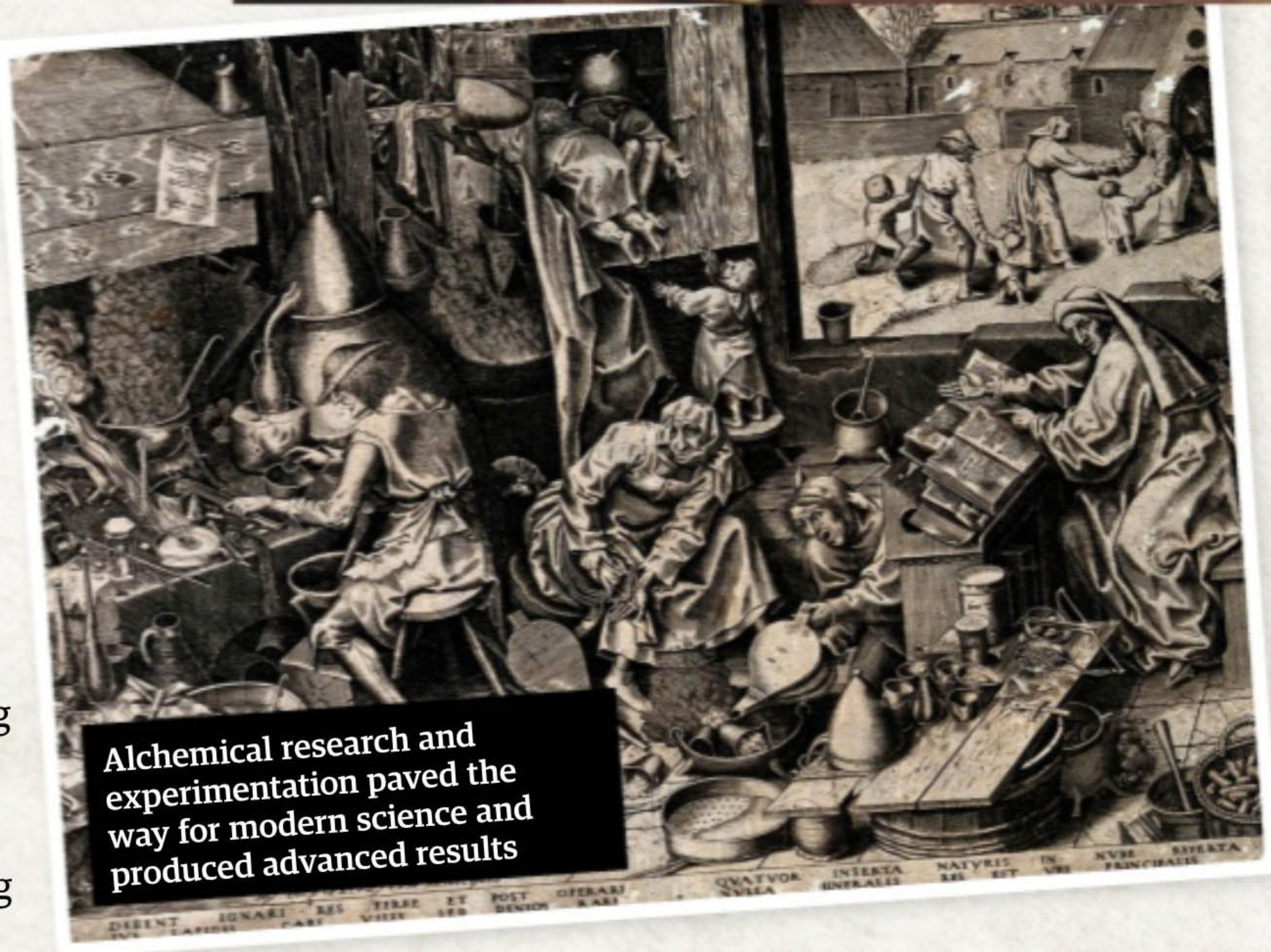
Mercury, which can spontaneously appear from several minerals, was considered a necessary substance to achieve immortality

Images source: WIKI, Getty

Alchemy in Europe

Alchemy took many forms, but in the European Middle Ages it played a central role in many of the developments of the age

European alchemists drew on a wide variety of sources but also drove alchemy towards becoming a real science



Alchemical research and experimentation paved the way for modern science and produced advanced results

Western alchemy is in some ways rooted in the ancient city of Alexandria. At a meeting point of Asia, Africa, and Europe, some of the foundational texts of alchemy were written there. It is impossible to trace a smooth descent of alchemical lore from Alexandria to the modern day, as empires rose and fell and conquerors swept across nations, but we can see the influences of alchemy moving with the centuries.

When Zosimos of Panopolis wrote about a 'xerion,' meaning medical powder, that helped to transmute metals into gold, he can have had no idea of its future. Xerion would pass first into Arabic as al-iksir and then into Latin as elixir. For the Medieval alchemists, this elixir could cause gold to proliferate, cure diseases, and grant immortality. We may never fully understand the evolution of alchemy in the West but we can certainly see its influence.

ALCHEMY INTO CHEMISTRY

In 1597 the German Andreas Libavius published his book titled *Alchemia*. In what today sounds like the first chemistry textbook he laid all of the secrets of the alchemists bare. Instead of relying on mystical allusions and code-names for elements he described what a laboratory should have in terms of equipment and how to use it. If he had to mention mercury he called it by its proper name and not 'green lion,' 'doorkeeper,' or any other riddling name. This was the first step of bringing alchemy out into the open.

When alchemical reactions were able to be replicated by anyone with the correct instruments and instructions they soon became standardised. Robert Boyle's *The Sceptical Chymist* would further separate the arcane researches of the alchemists from chemistry. Boyle's work was a body-blow to the four-elements theory of matter that had persisted since ancient Greece. The rationalisations and theorising of the alchemists concerning the elements was being replaced by empirical research. Lavoisier's later work would systematise the language of chemicals to allow researchers to describe their workings more accurately. Much of alchemy has been jettisoned from the modern study of chemistry and there have been those who viewed it as simply a dead-end that western thought blundered into for a few hundred years. Instead, today historians of science are finding ever more reasons to celebrate alchemy as a valuable precursor to modern science. Many of the chemical reagents we depend on today were first synthesised by alchemists. At the very least distilling the 'quintessence of wine' – pure alcohol – gives alchemy something to celebrate. Other reactions that were only later achieved in labs have been found in the books of alchemists. Making

gold volatile was thought to be nearly impossible and was described as being 'fortitudo fortitudinis fortissima' – the most difficult difficulty of difficulties. Yet the alchemist Basil Valentine described a method of achieving it by a seemingly pointless process involving constantly reheating it with acid. His dubious methods were scoffed at until a modern researcher realised through experimentation that the reheating steps produced chlorine gas, which was crucial to evaporating gold. Hidden in the texts of the alchemists, then, were chemical secrets.

FROM ALCHEMY TO MEDICINE

Alchemy in the West was deeply invested in the creation of panaceas, universal cure-alls, but they also helped to generate medicines that would target a range of illnesses. With the ability of alchemists to draw out the essences of things, new and exciting medicines were created. Alchemists used alcohol and acids to extract new chemicals from plants and rocks that they could use on patients. This chemical approach to medicine is called iatrochemistry and was founded by the German Philippus Aureolus Theophrastus Bombastus von Hohenheim, better known as Paracelsus. He moved away from the simple herbs and animal by-products favoured by other doctors of the time. He preferred to create medicines from chemical sources and said that diseases had chemical causes within the body. Today he is known as the Father of Pharmacology, though his conception of the universe also allowed for things like astrology and gnomes that few scientists would accept today.

Using Paracelsus' insights, those who came after him moved further from alchemy in their research. By treating the body purely as a set of chemical interactions they made astounding discoveries. The fact that acid is key to digestion was made, and lent credence to the theory that all of the body's actions could be described as effervescence, fermentation, or putrefaction.

Advances in the fields of physiology and microbiology rendered much of iatrochemistry obsolete. Yet the treatment of diseases using drugs compounded from a range of sources fed into modern medicine. Today there is no corner of the planet that is not being searched for some novel drug that can be used to benefit humans, and that is a project that the alchemists first began.

ALCHEMY TODAY

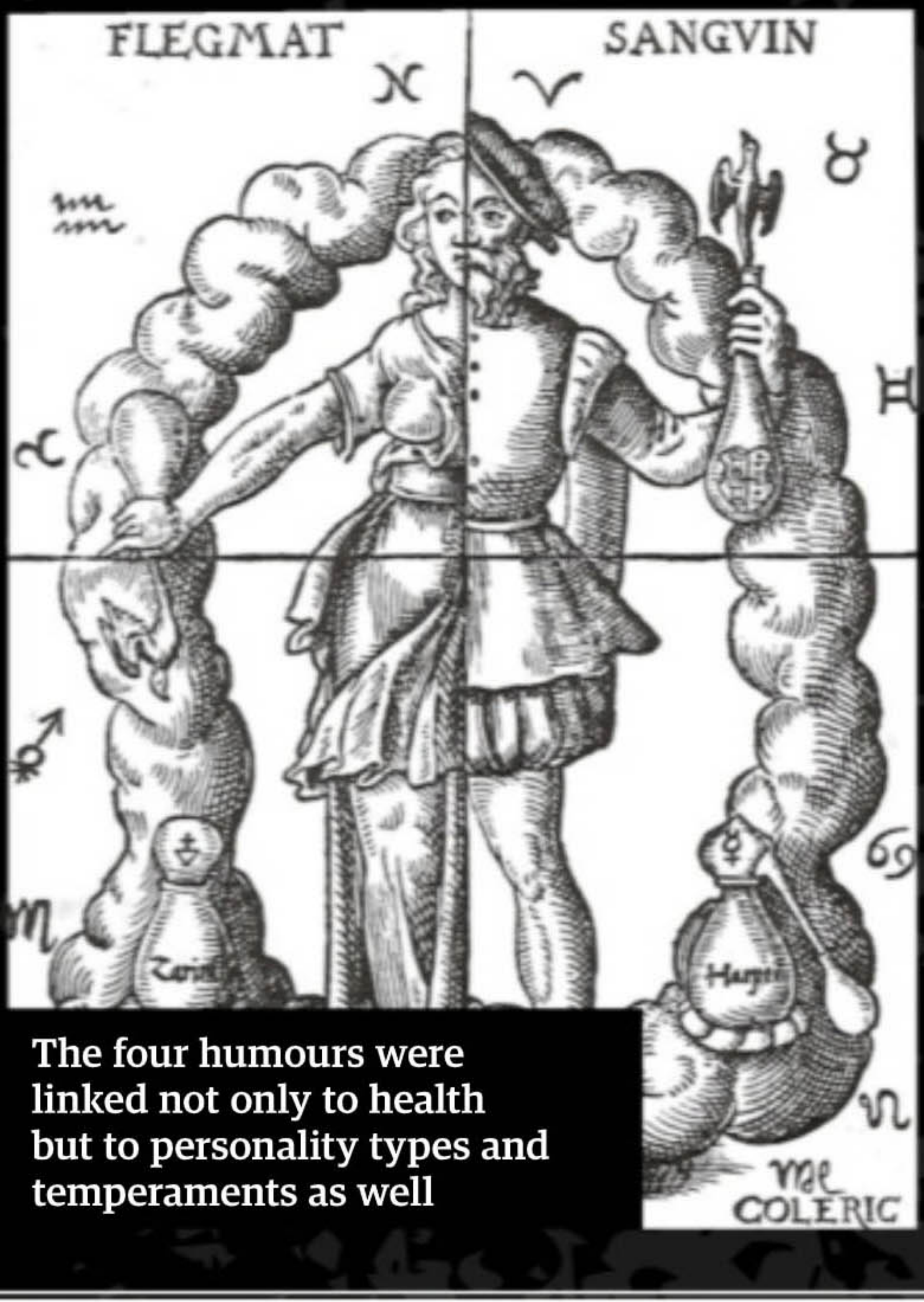
Alchemy is a dirty word in much of academia. There are still those who will roll their eyes at its mere mention. Yet to ignore alchemy is to ignore a great portion of the development of both modern science and spirituality. If you view alchemists as simply failed scientists then much of their work is nonsensical, but they were not pure empiricists looking to understand chemical reactions. Alchemists were on a search for truth and were willing to use any avenue that seemed promising to reach their goal.

Getting the bile out of medicine

Until the 17th century in Europe, much of the medicine taught at universities was underpinned by the work of doctors who had lived over a thousand years before. Galen was a Greek surgeon who had lived in the Roman Empire and yet his texts were still mandatory reading for trainee doctors.

Galen promoted the theory of humourism – the idea that the four humours of black bile, yellow bile, blood, and phlegm controlled health. These were linked to the conception of the four elements, as air was associated with blood and phlegm with water and so on. To bring the humours into balance you could either stimulate the body to produce more of one or lower the levels by extracting it. Bleeding was long thought to be a helpful cure.

Iatrochemistry, the treatment of disease with chemicals, had no time for humour theory. The alchemically trained doctors helped to introduce new theories of medicine into universities. The antiquated four humours and four elements theories were no longer sufficient for the understanding of the world. With increasing numbers of drugs and options at their disposal, doctors were finally able to innovate in their treatments for diseases. Galen was overturned at last.



The four humours were linked not only to health but to personality types and temperaments as well

> "To ignore alchemy is to ignore a great portion of the development of both modern science and spirituality"

Images source: WIKI

Egyptian khēmia

24 The crucible of alchemy
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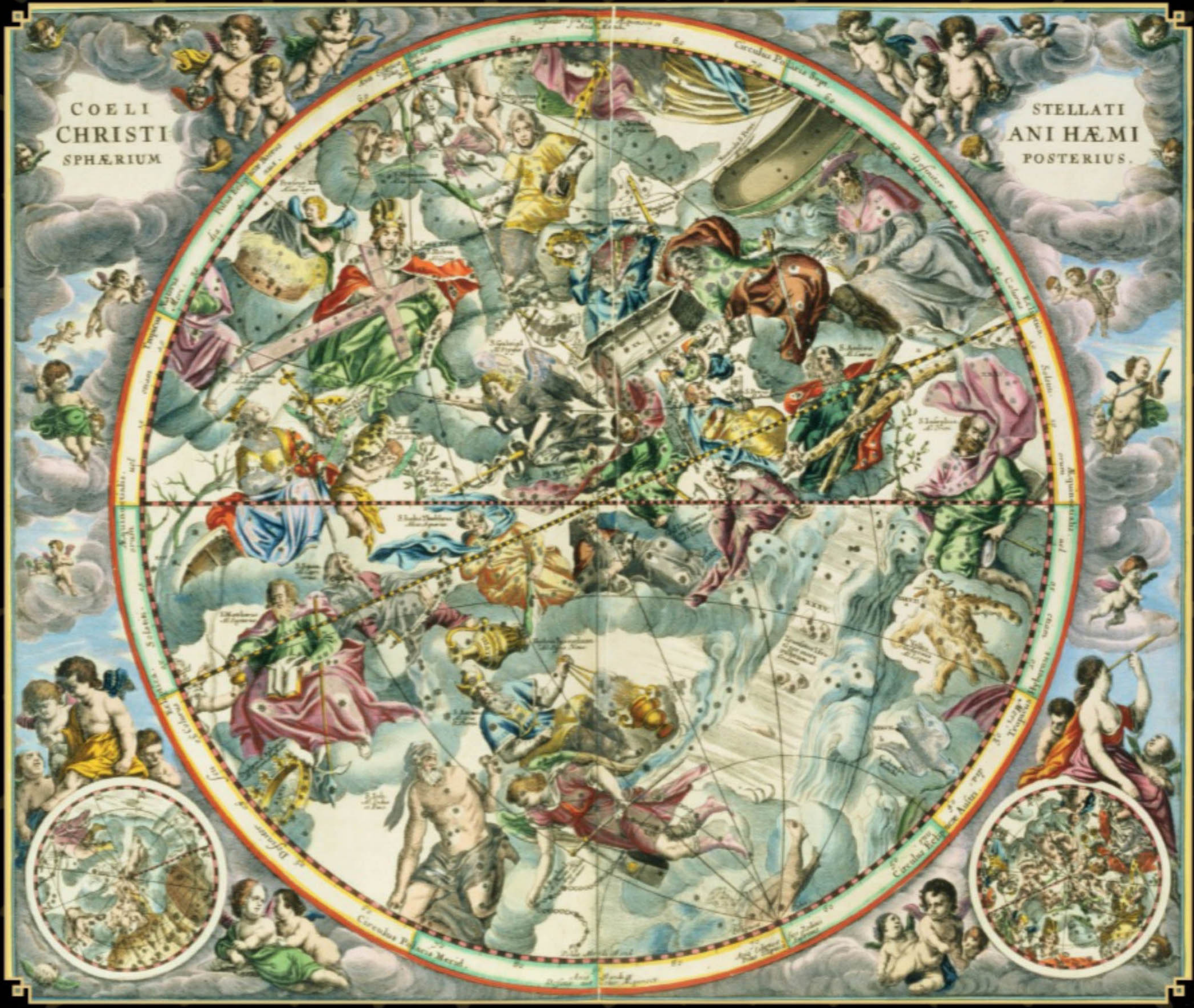
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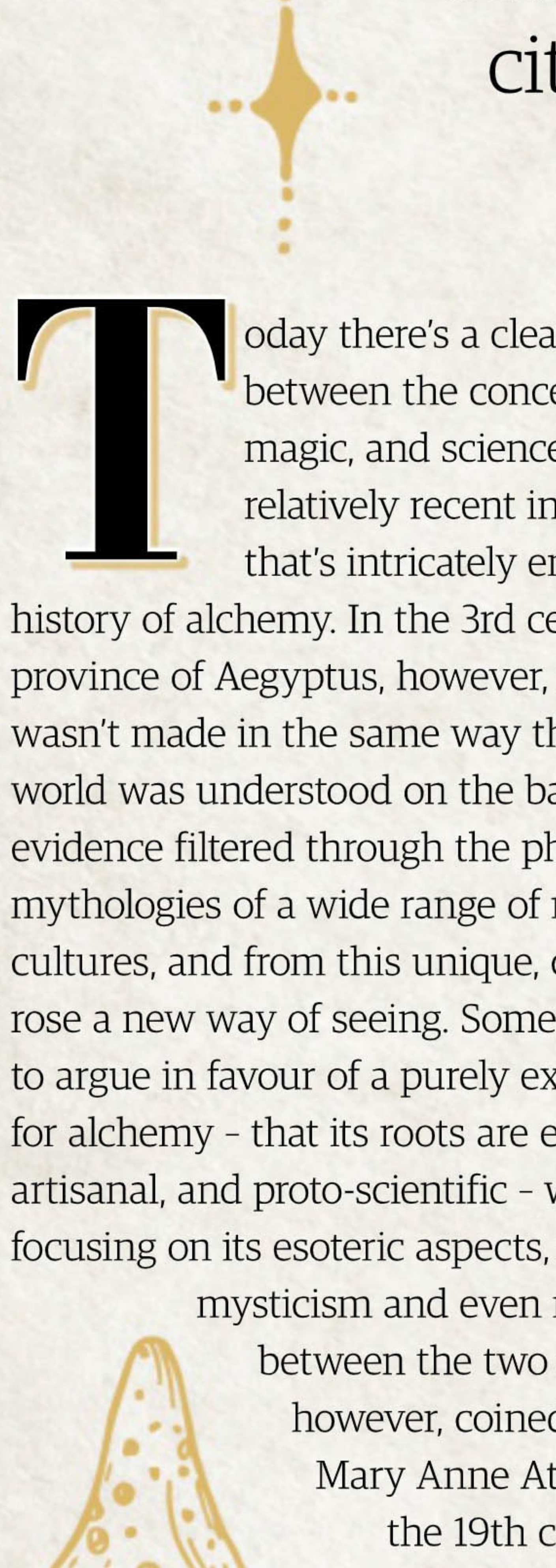
The crucible of alchemy

Alchemy began in the unique surroundings of 3rd century Alexandria. What was it about the Egyptian port city that made it the birthplace of this mysterious art?

Written by April Madden

Today there's a clear delineation between the concepts of religion, magic, and science, but this is a relatively recent invention, and one that's intricately entwined with the history of alchemy. In the 3rd century Roman province of Aegyptus, however, such a distinction wasn't made in the same way that we do now. The world was understood on the basis of empirical evidence filtered through the philosophies and mythologies of a wide range of religions and cultures, and from this unique, curious mixture rose a new way of seeing. Some historians may try to argue in favour of a purely exoteric beginning for alchemy – that its roots are entirely material, artisanal, and proto-scientific – while others prefer focusing on its esoteric aspects, its myth and mysticism and even magic. The division between the two is a modern one, however, coined by British writer Mary Anne Atwood (see p124) in the 19th century. 1700 years ago, the multicultural artisans of Alexandria, the capital of Aegyptus, didn't split ideas into hypothetical versus substantial applications or divide them into sections labelled real, fanciful, and downright made-up. Instead, they encompassed them all into one interconnected, holistic, practical yet arcane worldview that was full of possibilities. It's this worldview that radically influenced how alchemy began, and it could have only arisen the way it did in the unique society of Alexandria.



Situated in the north of Egypt, on the Mediterranean coast and the now defunct Canopic branch of the Nile, then a sizeable channel capable of supporting the deepwater ships that ferried cargoes of metal in and out of the small port town of Rhacotis, the capital of Graeco-Roman Egypt was constructed under the auspices of its 4th century BCE namesake, Alexander III of Macedon (Alexander the Great), who shortly after conquering Egypt dreamt about his favourite poet describing this little western corner of the Nile Delta to him. The young Greek king travelled there clutching his treasured copy of the works of Homer and wandered around until, standing on the rocky shore of the nearby island of Pharos, he was inspired to build a city.

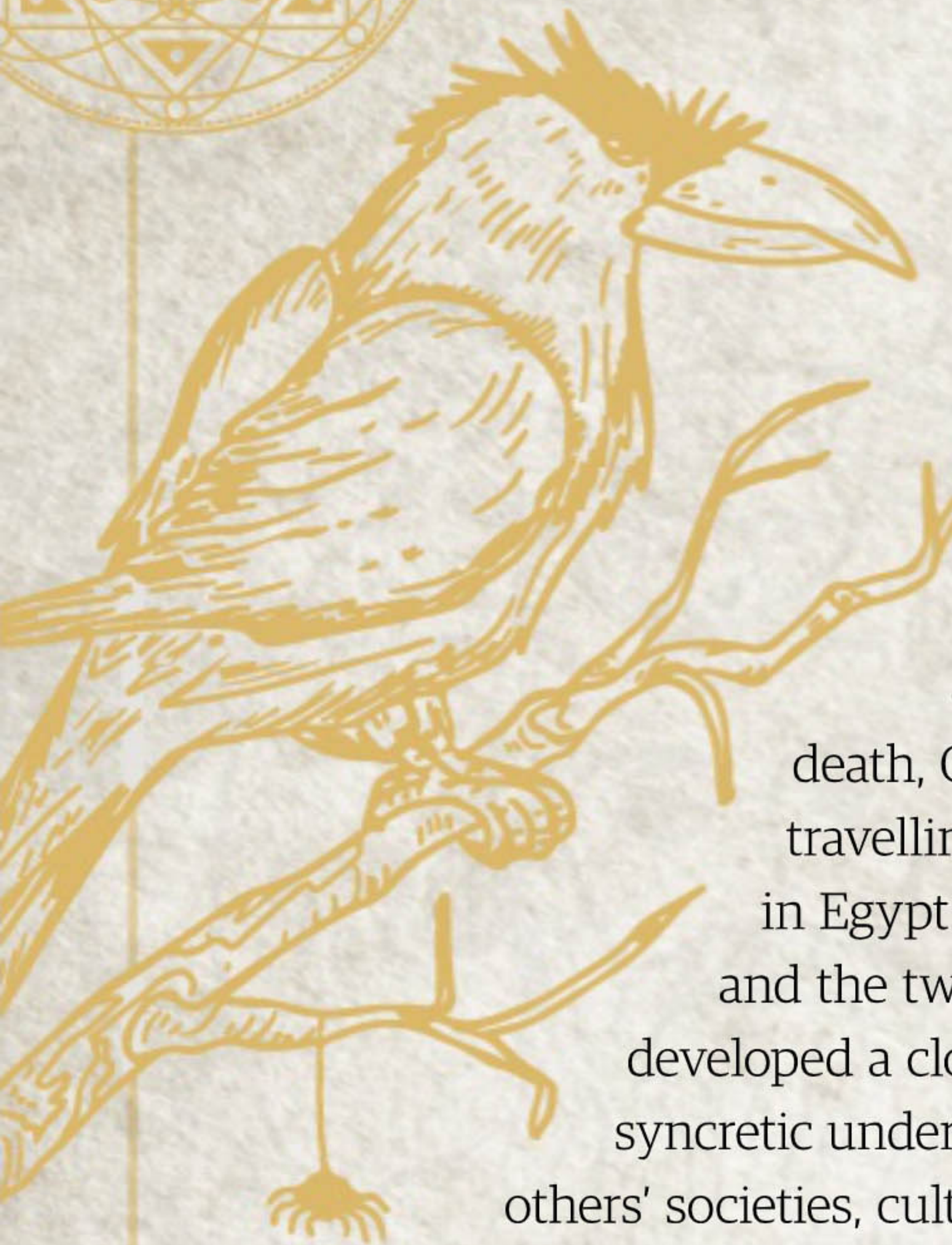
The newly named Alexandria was designed from scratch by the architect Dinocrates of Rhodes, an unparalleled opportunity for a town planner who'd previously only been able to insert the odd new build or standalone district into much older, more organic, sprawling urban centres. Legend has it that, lacking chalk, Dinocrates laid out his life-size gridiron plan for the city using barley flour. The problem was, the local seabirds kept devouring it while Dinocrates and his workers were trying to take the necessary measurements from the drawings. Many of them were superstitious, claiming that the birds' continual destruction of the designs was an omen that Alexandria shouldn't be built. Alexander's personal soothsayer, Aristander, however, took the birds' hunger as an augury that the new city would nourish the entire world. This interpretive tension between the preternatural and the pragmatic was at the heart of the next several centuries of Alexandrian life, centuries that eventually saw the unique Graeco-Egyptian city come under Roman rule.

The Roman conquest of Egypt was the result of the death of Pharaoh Cleopatra VII Philopater in 30 BCE after a short, bloody war prosecuted by the Roman statesman Octavian (later Emperor Augustus Caesar), due in part to the political fallout from the Egyptian queen's tactical but ill-fated love affairs with first Octavian's adopted father and benefactor, Julius Caesar, and then his later political rival Mark Antony. Cleopatra herself wasn't strictly Egyptian: she was a Ptolemy, a scion of the

A diorama depicting a typical Alexandrian khēmia workshop, based on archaeological remains found in the city and manuscripts describing laboratories

Alexandria was symbolised by its iconic lighthouse, the Pharos, one of the Seven Wonders of the Ancient World. As well as keeping shipping safe, it was reputed to represent the city's status as a beacon of knowledge

Images source: Getty



Greek dynasty that had ruled since the 323 BCE death of Alexander. By the time of Cleopatra's death, Greeks had been travelling to and settling in Egypt for centuries, and the two peoples had developed a closely connected, syncretic understanding of each others' societies, cultures and deities.

Rome may have tried to favour ethnic Greeks over ethnic Egyptians during its dominion, but in practice it could be hard to disentangle the two. A language had even been developed – Coptic – that allowed sounds present in spoken Egyptian but not in Koine Greek to be written phonetically, using a mix of Greek and Demotic characters (Demotic was a non-hieroglyphic Egyptian script used for writing documents) so that the two groups could communicate more effectively. Enabling clarity was important, as a lot of Graeco-Egyptian records of recipes, experiments, rites, spells and rituals (many contained in a collection known now as the Greek Magical Papyri) contained badly transcribed Greek versions of Egyptian words that had become so garbled they were little more than strings of nonsense syllables that were referred to as 'barbarous names'. Alchemy and its spin-off magical traditions would later become deliberately littered with these meaningless words and noises and even develop an elaborate system of occult superstition around them, but at alchemy's inception, the people of Graeco-Roman Egypt were focused on sharing and revealing rather than obfuscating their knowledge.

And those people weren't just Greek, Roman and Egyptian. Aegyptus was a world-famous cultural melting pot, a crossroads situated between Mediterranean Europe, Africa, and the Near and Middle East. Before Alexander's invasion, Egypt had, by and large, been under the purview of the Persian Achaemenid Empire since 525 BCE. The early Persians didn't impose cultural homogeneity on their conquests: Egypt had been permitted to keep its traditional religion and society intact, but Persia's scholarly Zoroastrian clergy would have certainly investigated its wealth of knowledge as well as sharing their own highly influential ideas (and those they'd picked up from forays as far afield as India and China). There

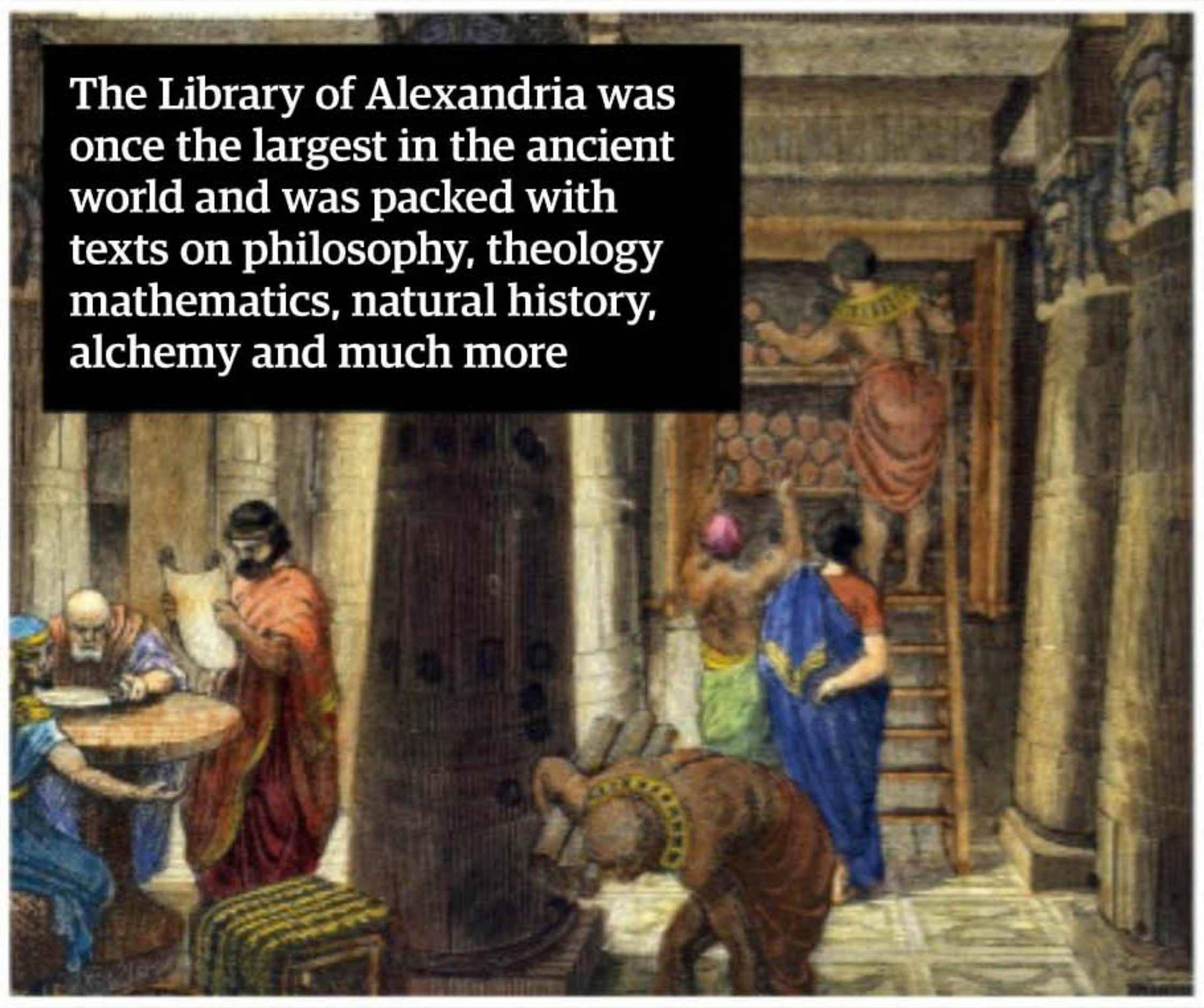
This idealised, Baroque 18th century history painting of Alexander the Great founding Alexandria by Placido Costanzi depicts the city's foundation as divinely inspired. Architect Dionocrates is shown demonstrating the city plans to the king

Gods of Alexandria

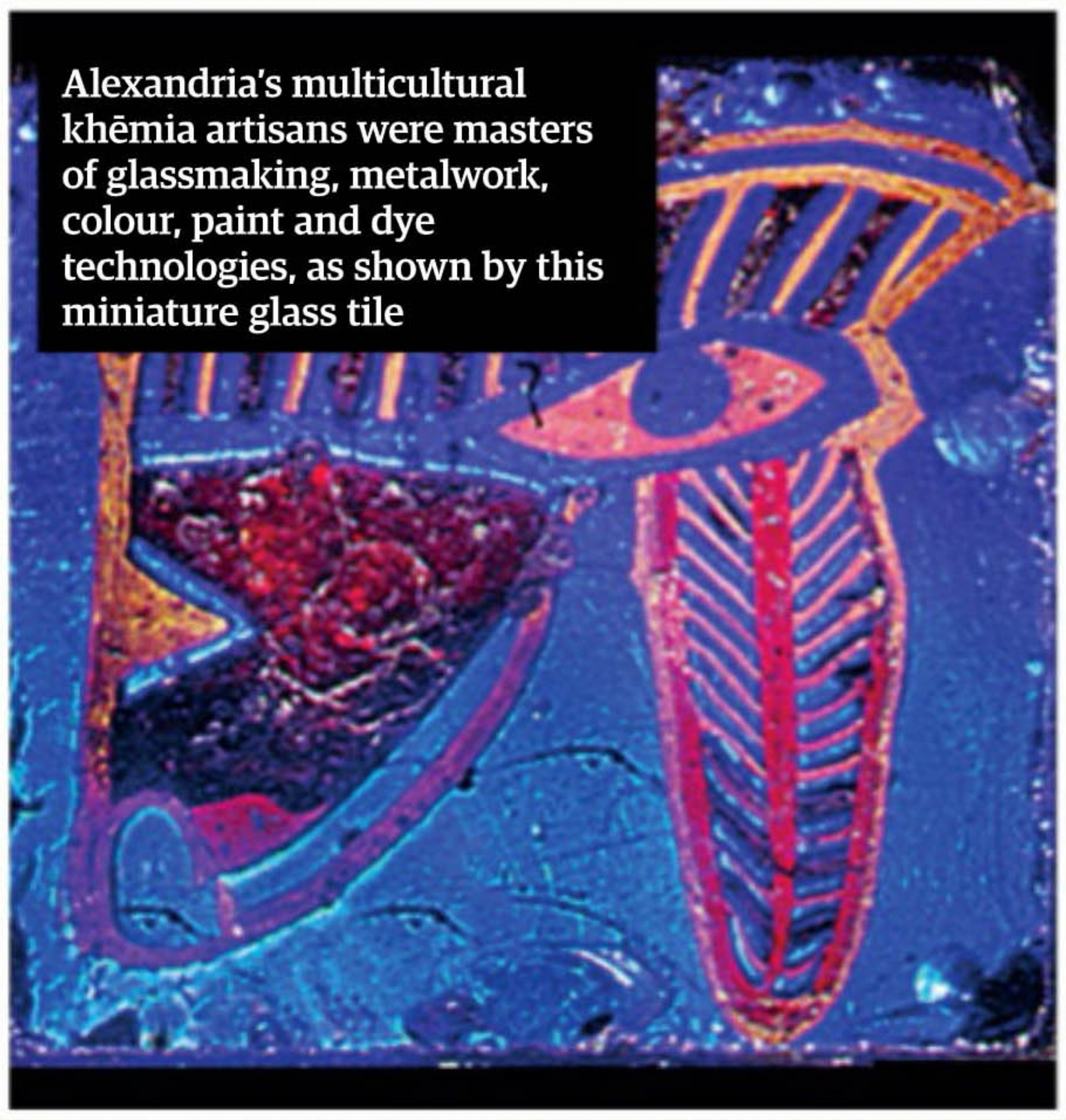
Alexander the Great himself was such an inspiration to the ancient world that even before his death he was viewed as a demigod when he conquered Egypt – he was crowned as Pharaoh in Memphis and named 'Son of the gods', which affected the religious young king very deeply. After his death his remains and even his legend were venerated.

The dynasty that ruled Egypt after him, founded by his companion and possible half-brother Ptolemy I Soter, recognised that blending the gods of Egypt with those of Greece would go a long way towards unifying a population that had only come together thanks to its adoration of Alexander. The Ptolemies began a syncretic process of combining the gods of both cultures: Zeus-Ammon was already a duality both societies were comfortable with; to that they added Dionysus-Osiris, Isis-Aphrodite, Hermanubis, Hermes Trismegistus (see p30), and, most importantly for Alexandria, Serapis, to whom was dedicated the Serapeum of Alexandria, a temple complex that was referred to as the "daughter of the Library of Alexandria", suggesting that it too was a centre of learning. Serapis was a synthesis of two Egyptian gods, Osiris and Apis, but represented with entirely Greek iconography, as a strong, middle-aged man in the prime of life, akin to Zeus, with chthonic and water-god elements.

Alexandria's patron god Serapis was a combination of Egyptian fertility god Osiris and sacrifice and rebirth god Apis, with Greek iconography depicting him as a strong, patrician pater familias for the entire city.



The Library of Alexandria was once the largest in the ancient world and was packed with texts on philosophy, theology mathematics, natural history, alchemy and much more



Alexandria's multicultural khēmia artisans were masters of glassmaking, metalwork, colour, paint and dye technologies, as shown by this miniature glass tile

were still plenty of ethnic Iranians in Egypt's rich cultural mix even after Alexander's conquest, followers of Zoroaster or of the upstart Sasanian preacher Mani and his syncretic 'Religion of Light', which drew influences from Judaism, Buddhism, Hinduism, Christianity and Zoroastrianism together into a faith known as Manichaeism. From the south, travellers and settlers from the Black Land's ancient African allies in what are now Eritrea, Djibouti, Ethiopia, Somalia and Sudan either followed similar pantheons to that of polytheistic Egypt or brought their own mysterious monotheism with them, thought to be centred around a providential, life-giving sky god who was possibly called Waaq. In addition, Alexandria was also home to the largest urban population of Jews in the ancient world, while the nearby Natron Valley played host to the Desert Fathers and Mothers, the ascetic hermits that had a profound impact on the development of Christian theology, who had gathered from across Christendom to devote themselves to honing the tenets of their new faith out in the wilderness. Centuries before the prophet Mohammed's inception of Islam, Arab visitors from the peninsula just across the Red Sea may have followed interesting flavours of early Judeo-Christian faiths, Zoroastrianism, Manichaeism, or an indigenous polytheistic religion revolving around creator god Allah, three goddesses called al-Lāt, al-'Uzzā, and Manāt, and a tangled, localised folkloric pantheon involving other minor deities, djinn, and the circumnambulation of sacred stones. The vast Roman Empire, meanwhile, with its well-travelled, socially mobile, ethnically diverse legions and civil servants, had a taste for mystery cults, which it liberally imported to and exported from all of the territories it conquered. One of the Greek Magical Papyri is referred to as the *Mithras Liturgy*, after the mystery cult devoted to the Zoroastrian divinity Mithra that spread extensively throughout the Roman Empire, although the text itself seems to have more in common with the later alchemical ideal of the magnum opus than it does with what little we know of Romano-Persian Mithraic rites. The Greeks had a vast range of intellectual and proto-scientific philosophies as well as a polytheistic religion that had been deeply syncretised with both the Roman and Egyptian pantheons, while the native Egyptian religion itself was among the oldest and most complex faiths the world had ever seen, and its practitioners were famed for the quality of their scholarship on a variety of subjects, notably cosmology, medicine, and the manufacture of paints, dyes, cosmetics, scents and other potions. In the capital of Graeco-Roman Egypt, elements of all of these diverse traditions – some ancient, some new – came together like the result of a successful alchemical experiment to form something unique: a clever, questioning, technically adept society that attracted other curious minds from a broad spectrum of faiths and cultures.

The city wasn't a multicultural utopia. There were plenty of ideological clashes between religious groups – gentiles versus Jews was a frequent flashpoint, as was pagans versus Christians: in the 2nd century CE there had been pogroms against the Jewish community, and answering riots as they rebelled against the persecutions of the Kitos War; Christians were frequently oppressed and even martyred by both Greek and Roman authorities. Nonetheless, despite the tensions that occasionally flared, ancient Alexandria was a beacon, just like the one that graced the roof of the iconic lighthouse that towered over its harbour from the tiny island of Pharos, one of the Seven Wonders of the Ancient World. The Pharos lighthouse became an enduring symbol of the city that was one of the ancient world's leading lights in intellectual and spiritual development. Alexandria was a place where Greek philosophy could come together with the long-studied theologies of Judaism and its then more mutable, much younger cousin, Christianity, as well as the diverse beliefs of other residents of and visitors to the city. A century or so before the confluence of these and many other ideas would come together to create the beginnings of alchemy, they had already begun to cross-pollinate. The first result of this seemingly unlikely combination is now known as Gnosticism.

Academic debate still rages as to whether Gnosticism was a religion in its own right or an inter-faith intellectual movement, although it's likely that the original Gnostics would probably be somewhat bemused by the fact that we make a distinction between the two concepts. Their complex worldview took and combined theological ideas from Judaism and Christianity with Greek philosophy and the cosmological elements of Persian Zoroastrianism. While the origins of Gnosticism are murky, it's safe to say that we have no records of it that predate Christianity, and we know that Alexandria was very important to its early development. Early Church Father Clement of Alexandria, an ethnic

Images source: Getty, Wiki

The Library of Alexandria experienced several attacks: accidental burning by Julius Caesar in 48 BCE when he fired his own ships, an attack by the Roman Emperor Aurelian in 272 CE, and finally Emperor Diocletian's siege of Alexandria in 297 CE

Greek who converted to Christianity, was certainly familiar with its synthesis of Greek philosophy, Judeo-Christian theology and Eastern mysticism, although it's debatable whether he was a practising Gnostic or not. Like many intellectuals of the time, Clement made a distinction between his public works and other more secret records that he kept, and it's these that contain tantalising glimpses of Gnostic thought. Throughout much of Christendom, Gnosticism was considered a heresy - the first to emerge within Christian theology. The Alexandria-educated 2nd century Egyptian theologian Valentinus broke with the Catholic church when it passed him over for a promotion and went on to embrace the philosophy to such an extent that a branch of Gnosticism - Valentinianism - is named after him. 'Valentinian' was possibly the first term that was used to refer to Gnostics - the original followers of the idea used 'gnostikos' (Greek for 'having wisdom') to describe their philosophy, not themselves. 'Gnosticism' and its associated labels is an 18th century construct.

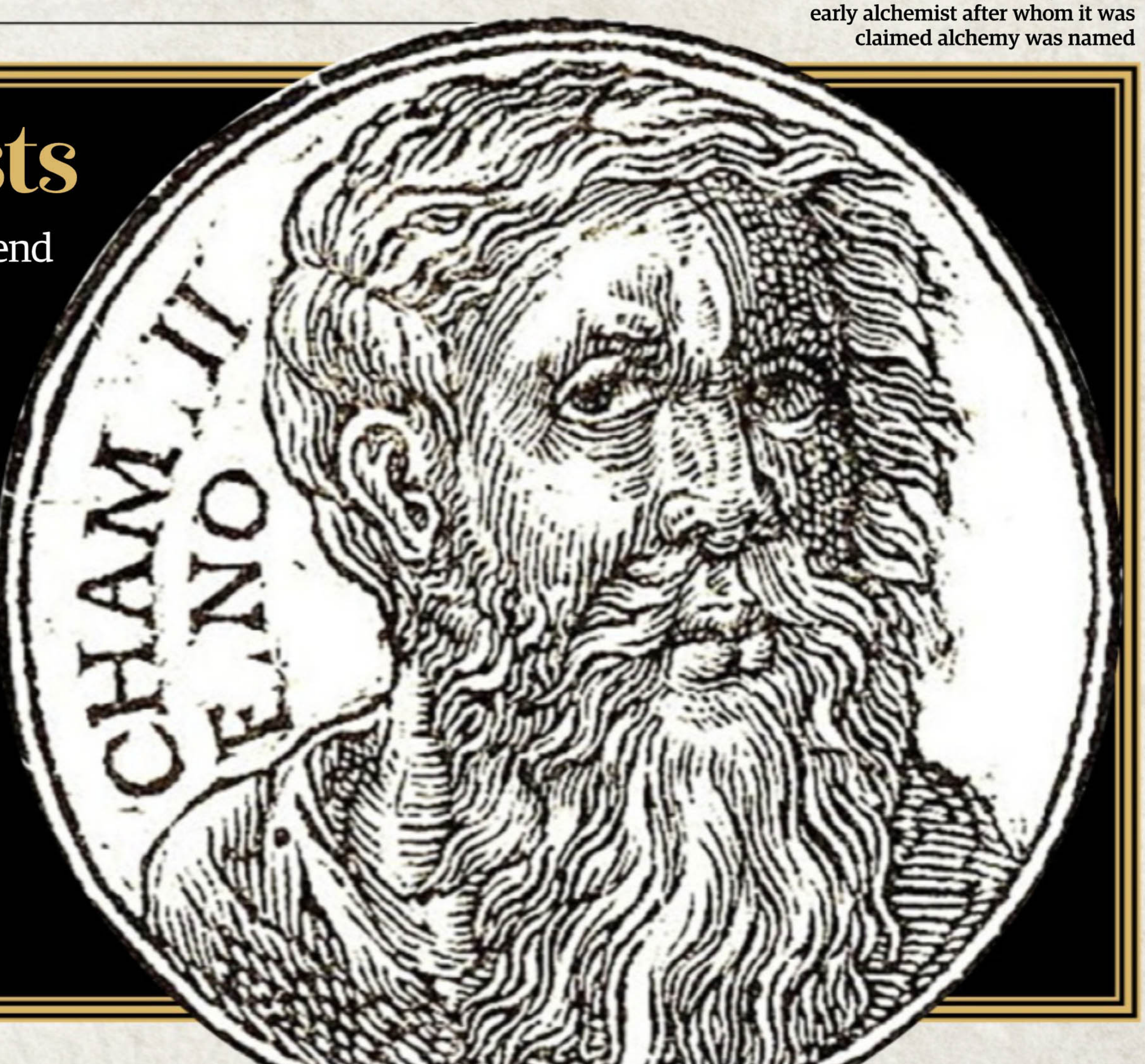
Movements like Gnosticism found such a welcoming home in Alexandria because what we would term its middle class - scholars, artisans, merchants, civil functionaries and the like - had a vibrant, multi-ethnic, knowledge-seeking mindset. At the height of its powers, Alexandria's famed

"Apollonius of Rhodes, author of the *Argonautica*, was one of its head librarians"

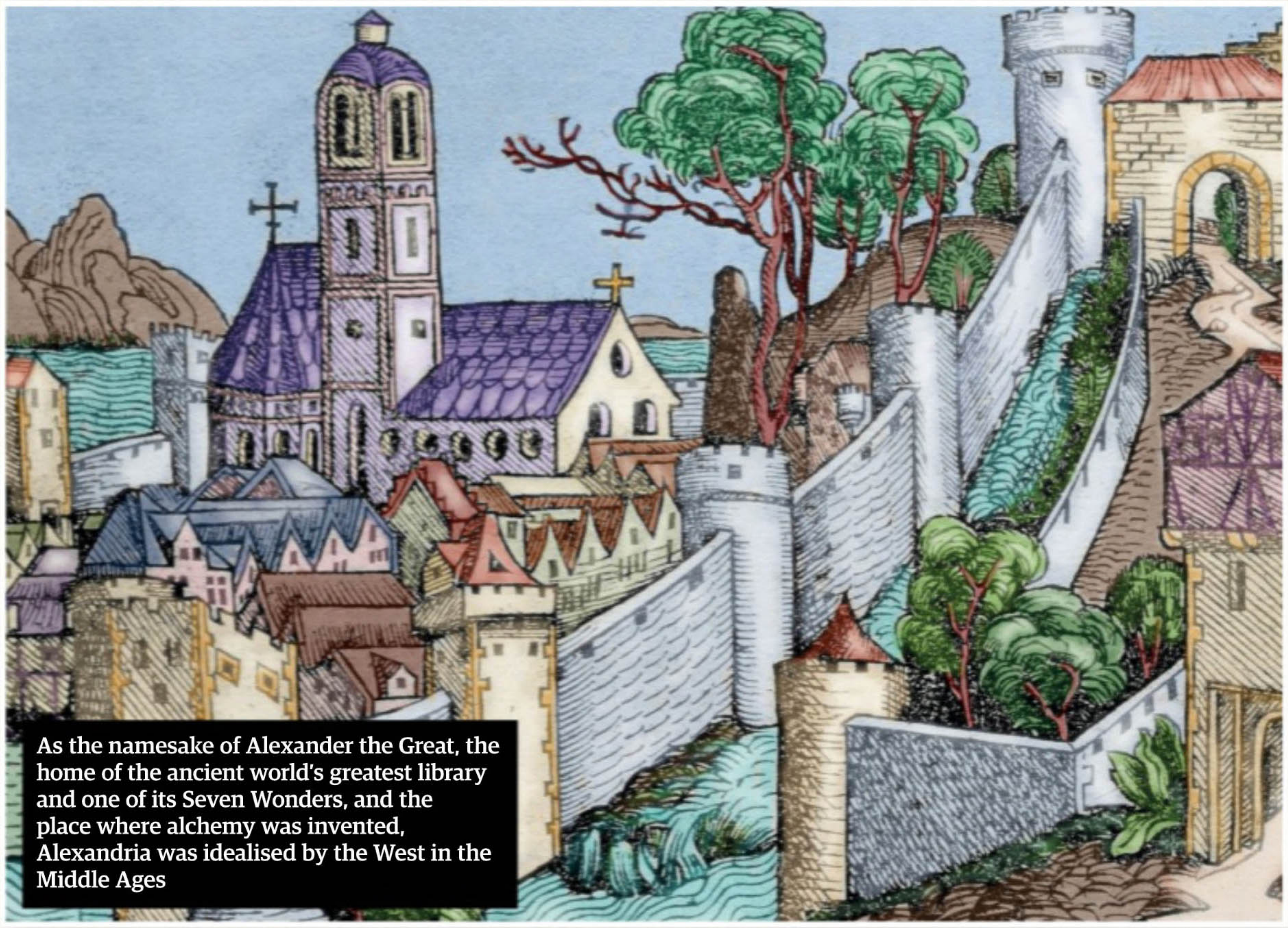
Early alchemists

The earliest alchemists are more legend than historical figure

The earliest figures in Alexandrian alchemy are semi-legendary. In a world in which similar-sounding words across different languages were enough to prove a deep connection, an early alchemist, and one who apocryphally was thought to have given his name to the art, is Chymes, known in Arabic manuscripts as 'Kimas' or 'Shimas'. In some Alexandrian Graeco-Jewish traditions he was associated with Ham, the son of the bliblical Noah, who was thought to have settled in Egypt after the Flood. Another early alchemist with an Abrahamic name is the mysterious Moses of Alexandria, who is associated with the prophet of the same name - in ancient Alexandria the biblical Moses was thought to have invented the arts and sciences. Then there were the mysterious figures who wrote under the pen names of Greek philosophers - Pseudo-Democritus, Pseudo-Aristotle and Pseudo-Plato. We know about many of these figures from the writings of Zosimus of Panopolis (see p50). He praised many of them, but wrote to his sister Theosebeia, also an alchemist, not to continue corresponding with one Paphnutia the Virgin, saying she was under-educated and incorrect. It's thought that the earliest historically provable practicing alchemist was Mary the Jewess (see p48).



A piece of syncretic Alexandrian folklore made the biblical Ham, son of Noah, into Chymes, an early alchemist after whom it was claimed alchemy was named



As the namesake of Alexander the Great, the home of the ancient world's greatest library and one of its Seven Wonders, and the place where alchemy was invented, Alexandria was idealised by the West in the Middle Ages

library was the largest in the ancient world, part of a vast complex called the Mouseion, an institute somewhat like a modern-day research university, dedicated to the Nine Muses of Greek myth and, at its peak, packed with over 1000 well-paid, freethinking scholars busily collecting knowledge from throughout the known world and translating it for the benefit of its large membership. Apollonius of Rhodes, author of the epic poem the *Argonautica*, was one of its head librarians; during his tenure, the famed mathematician and inventor Archimedes visited. His followers claimed that observing the Nile allowed him to come up with his famous water pumping device, the Archimedes screw, but it's more likely that the Sicilian-Greek engineer got the idea from records of ancient Egyptian, Sumerian or Persian irrigation technologies that he found in the extensive scroll collection of the Great Library. By the time of the Roman occupation, however, membership of the Great Library was much fallen off, and it met its sad end under the auspices of either the Emperor Aurelian in 272 CE or the Emperor Diocletian in 297 CE. Diocletian is a likely candidate: the Croatian-born scribe's son was a boot-strapped army commander who rose to the purple to become a Rome-first traditionalist. He persecuted dissenters and minorities throughout the Empire during his rule and, after a visit to Alexandria, issued decrees that condemned "the ancient writings of the Egyptians, which treat of the khēmia transmutation of gold and silver" and encouraged the burning of alchemical texts. It's thought that this is when the original Alexandrian version of the *Hermetica* (see p94) was lost.

Alchemy – or khēmia, as it was then known – is thought to have begun around a century before Diocletian's ban. Its earliest known figures include Mary the Jewess and Cleopatra the Alchemist, Zosimus of Panopolis and master of poisons Agathodaemon, who used the local natron salts in combination with arsenic-bearing minerals to produce the clear, deadly arsenic trioxide. Much of their early knowledge is likely to have come from metallurgy: arsenic, for example, can be used to harden bronze, and this is how its poisonous nature was discovered. But while alchemy has its founding myth of Hermes Trismegistus (see p30), the actual historical record of its inception is somewhat sparse. These early practitioners are recorded as among the first to have developed scientific instruments like the bain-marie (Mary) and the alembic (Cleopatra) as well as some of the first alchemical processes. But could the proto-chemists of ancient Alexandria really transmute base metals into noble ones? They could certainly appear to do so. An Alexandrian record now known as the Leiden Papyrus preserves the formula for an important recipe known as 'water of sulphur'. A carefully measured combination of calcium oxide, sulphur and acid (the recipe suggests vinegar or urine), when correctly prepared and applied it can turn silver to the rich, gleaming colour of gold. Science historian Lawrence M Principe, a practicing chemist as well as a historian of alchemy, has replicated the substance and found it to work. These kinds of transformations are what the early chemists of Alexandria specialised in: they did a roaring trade in producing fake metals and gems for the Egyptian city's colourful, well-dressed clientele. For Diocletian, struggling with Empire-wide economic disasters brought about by inflation, forgery, coin clipping, and exchange rate inconsistencies that not even a new tax levy could fix, the idea that the alchemists of Alexandria could pass silver off as gold was terrifying. Although ancient Rome has a reputation for looking askance at any kind of esoteric practice that it hadn't accepted as its own, Diocletian's proscriptions weren't so much about a fear of non-Roman sorcery as they were about the very real financial dangers of a new and disruptive technology. Alexandria's alchemists were nothing less than a threat to the fiscal stability of the entire Roman Empire, an empire that within Diocletian's reign had revealed itself to be too large and unwieldy for one ruler to manage and had fractured into the First Tetrarchy of four regional leaders. Diocletian's attack on the alchemists of Alexandria was nothing new – he was a keen persecutor of Manicheans and Christians too – but in attacking the alchemists, and more importantly, the records of their knowledge and works, Diocletian effectively tore the heart out of the prosperous city that early alchemy called home. Alexandria had bounced back from the brink before – it had lost its founding father, misplaced his tomb, experienced disease, disaster and death; it had even coped with a predecessor of Diocletian's massacring over 20,000 people, but one thing it couldn't handle was burning books. Diocletian's edict and the loss of its library seemed to suck the life out of the city. It limped sadly along until a tsunami thrown up by the 365 CE Crete earthquake devastated it. But the seeds of alchemy had been left in the wreckage, and they would eventually be rediscovered by the city's Arabic conquerors, who would continue the alchemists' research until it spread and became both magical theory and modern science. Perhaps Aristander was right when he told Alexander that his Egyptian city would one day nourish the world.

> "Alchemy is thought to have begun around a century before Diocletian's ban"

Images source: Getty, Wiki

Thoth, magic, and Hermes Trismegistus

A mythical figure. An ancient prophet. The figure of Hermes Trismegistus is shrouded in mystery, but where did the founder of Hermeticism really come from?

Written by Dee Dee Chainey

The Egyptian god Thoth depicted as a baboon, now located in the Louvre (Paris)

Hermes Trismegistus is a mystical figure, revered by many as an ancient prophet, who shared his knowledge of alchemy and the occult sciences through his writings in the ancient world. To uncover the truth of this figure, we must look back, to the furthest reaches of ancient Egyptian myth, to draw together the seeds of the legends that became a man.

Ritual and religion pervaded every part of life in ancient Egypt. A plethora of exotic and unusual gods and goddesses made up their diverse pantheon, worshipped as masters of the natural world. While gods were many, worship in this ancient religion focused on the king as an intermediary between the people and the divine, yet ancient texts hidden for centuries in tombs and secreted underground have now been unearthed. These texts show how people beseeched the gods and gave offerings up to them, to ask for their blessing and help in all things. These gods ruled over natural phenomena, the astral bodies, and aspects of daily life. Each deity was seen as an unknowable force, so depicted symbolically in ancient art, with different animals, objects and signs to represent these characteristics, and convey the true nature of the god. During the Middle Kingdom golden age, Osiris the god of the dead was one of the most important deities of the pantheon. Others included Isis, who offered help to the dead, and ruled magical healing and protection. She is linked with baking, weaving and brewing. Associated with the sky, Horus was a falcon-headed god, with the Moon as his left eye, and the Sun as his right. Linked with Horus, and too having the falcon as a symbol is Ra, a creator god, who would travel across the sky each day in his barge, carrying the Sun; at night he would travel to the underworld, hence explaining darkness to everyone who knew this myth.

From the Old Kingdom (c. 3700 to 2150 BCE) onwards, Thoth was a god of wisdom, writing and hieroglyphs, as well as knowledge

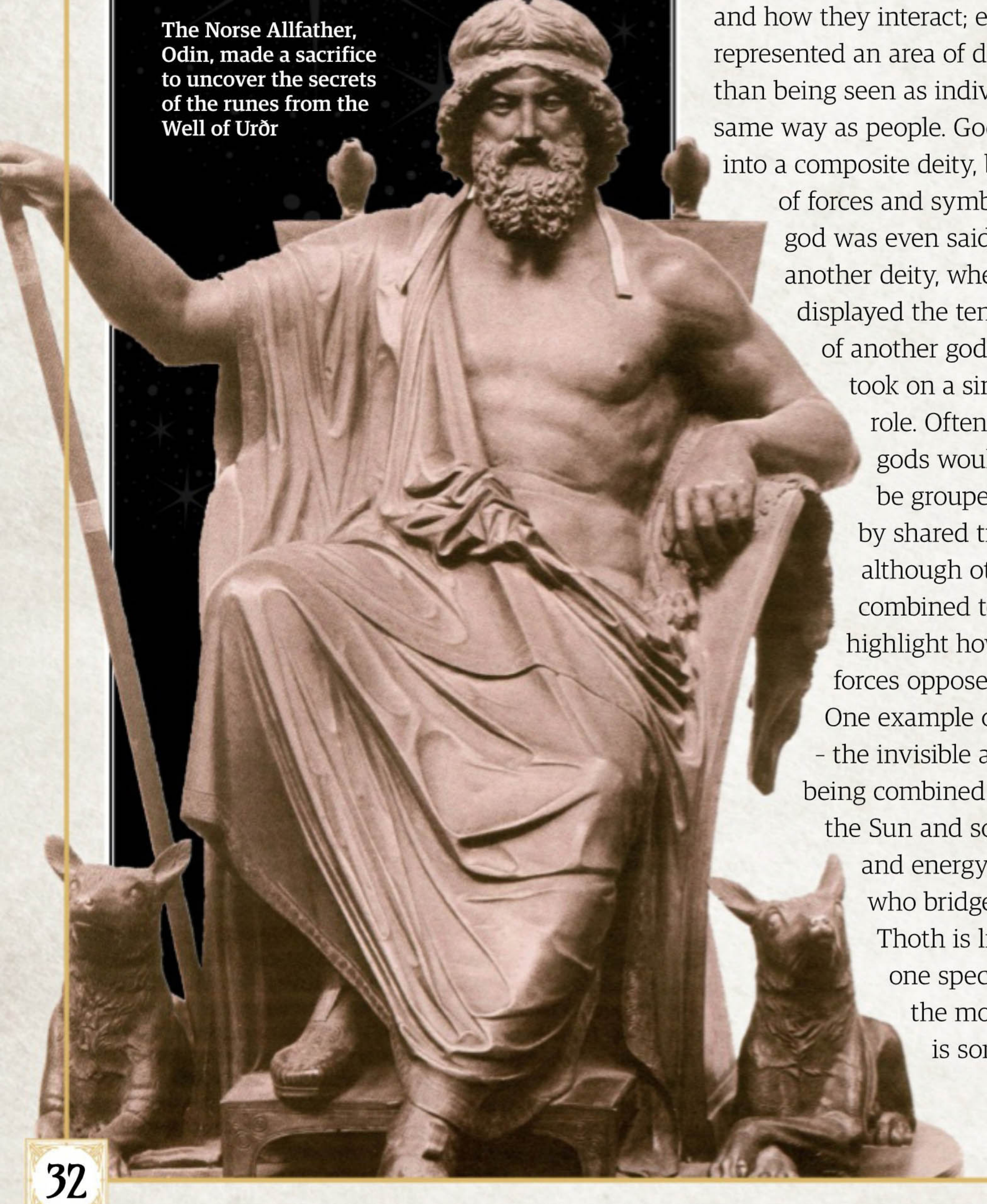
Augustine condemned Hermes Trismegistus for the ‘idolatry and magic’ found in his writings

Images source: Alamy

Hermes Trismegistus, pictured under the Greek word ‘theos’ or god, with the caduceus at his side

Gods of writing and magic

Gods of words and writing are often also gods of magic. Up until the Greek culture pervaded Egyptian life, writing and literacy were considered secret knowledge kept only for priests and scribes. Thoth was often considered to have created writing and languages as the scribe of the gods, a responsibility shared with the goddess Seshat; seen as the 'lord of books', he was a powerful word-smith. Many gods linked to the art of writing are also gods of magic. Odin, the chief god of Norse mythology, was a god of wisdom, healing and magic, and credited with uncovering the wisdom of the runes. He was said to practise the secret art of seiðr magic and sorcery, and was the god who uncovered the wisdom of the runes by hanging himself from the branches of the World Tree, Yggdrasil. He also pierced himself with a spear as a sacrifice, in order to call up the runes from the well of the Norns (or Fates). Runes formed the alphabet used by the Vikings for writing magical charms, once more showing a link between writing, moving between the worlds, and magic – the same powers wielded by Thoth.



The Norse Allfather, Odin, made a sacrifice to uncover the secrets of the runes from the Well of Urðr

> "Gods could be combined into a composite deity"

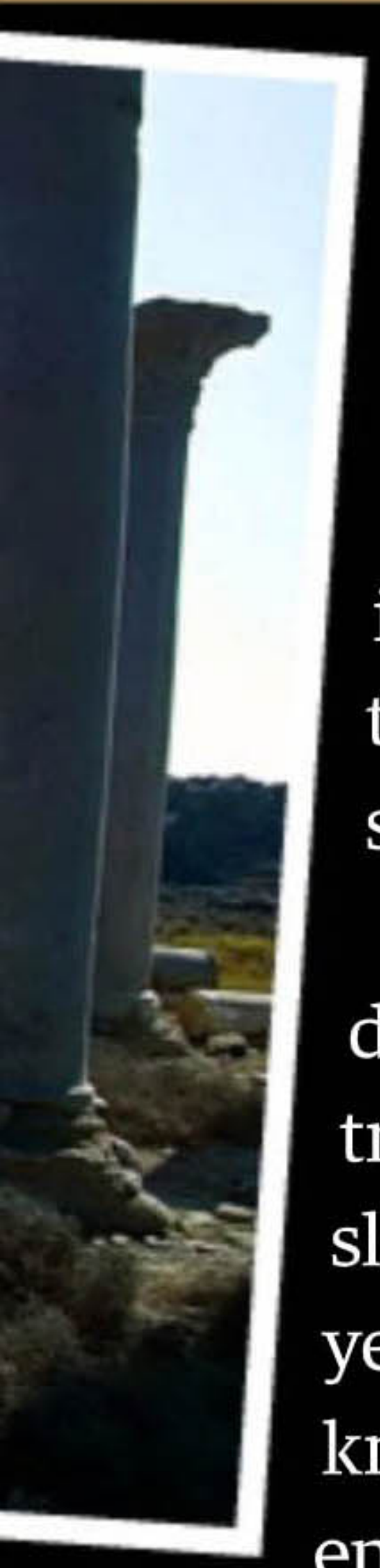
and calculations, and was very much thought to maintain equilibrium within the universe. Said to stand at the side of Ra's solar barge as it travelled across the sky, his wife Maāt stood on the opposing side. Thoth played an important role in Egyptian mythology, and while his worship was most prominent in the city of Khemenu – called Hermopolis by the Greeks, the City of Hermes or the City of the Sun God – he was worshipped in many areas of Egypt. The figure of Thoth developed greatly over time, and he later became a mediator between the deities, overseeing battles between good and evil, as well as becoming associated with magic, religion, philosophy and science, and was credited with giving movement to the astral bodies.

The role of the gods in ancient Egypt differs somewhat to gods in other traditions. The Egyptians did not just tell stories to explain the world, but expressed their views of the reality through the relationship between divine forces and how they interact; enter the gods. Each deity represented an area of divinity or force, rather than being seen as individual entities in the same way as people. Gods could be combined into a composite deity, becoming an amalgam of forces and symbolism. Sometimes one god was even said to exist within another deity, when one deity displayed the tendencies of another god, or took on a similar role. Often the gods would be grouped by shared traits, although others combined to highlight how some forces opposed others. One example of this is Amun – the invisible all-pervading creator – being combined with Ra – the god of the Sun and source of all its power and energy – to create Amun-Ra, who bridged both of these aspects. Thoth is linked to the Moon, and one specific aspect of himself is the moon god Iah-Djehuty; he is sometimes depicted with a crescent moon and lunar disk on his head because of this association. In this form, he appears as a man with the head of an ibis, with a focus of commanding times and seasons. He takes the head of a baboon when his focus is equilibrium and balance, as the god Āān. As Sheps he takes the head of a hawk; as Mendes the head of a bull. When depicted in more general terms, he takes the form of an ibis entirely. He is seen as a self-created god, who calculated the creation of the heavens, and indeed as the tongue and very heart of Ra: directing the solar barge across the skies, giving Ra mental reasoning and the speech with which to enact his will.

By the 12th century BCE, Egypt had faced centuries of unrest and battle against the Hittites, and political chaos ensued. It never truly regained its strength. A wave of Hellenisation reached the shores of Egypt by the end of the 4th century BCE, after the conquest of Alexander the Great. The Egyptian people resisted as Ptolemy, a Macedonian Greek general, was instated as king, modelling himself on the Egyptian pharaohs of old. The new Greek ideals entering the country after the conquest had a profound impact on Egyptian religious life. King Ptolemy I introduced the worship of new gods in order to unify the two opposing traditions of the Egyptian people and their Greek rulers; called interpretatio Graeca, Greek gods and myths were equated with those of other religions as an easy way to understand the invading culture. This was easily accepted by the Egyptians, who were already used to combining their deities as one. The Egyptian Osiris and Apis grew into the new 'Serapis', a figure joining Greek appearance and Egyptian religious ideas. This god was used as a poster-boy figure for this Greek integration, as the king took a pre-existing belief and capitalised on it, morphing the god into an amalgam of the two, and spreading this worship throughout Egypt for his own ends. The ancient Egyptian god Thoth did not escape this fate, as he was too a victim of this attempt at

> One of the roles of Thoth was as a secretary to Ra in the underworld

Images source: Alamy, Wiki



integration. Thoth became associated with the Greek god Hermes, as the two ruled over similar forces in the universe.

Hermes was the Greek god of travellers, doorways, boundaries and their transgression, as well as herds, sleep and gymnastics, yet he is most famously known for being an emissary and messenger of the gods. Thoth has also been called a messenger; while some downplay this role and focus on his aspect as a scribe, it is understandable why some would equate the concepts of messenger and acting as an intermediary, particularly with both figures grounded in diplomacy and equilibrium. Hermes is usually depicted with a cap, winged boots, a kērykeion, caduceus or herald's staff as a symbol of peace, often wearing a robe or cape, only later developing into the naked youth we know today. Strangely, Hermes was also known for magic, as his helmet was said to conceal him, and it was he who gave a magical plant to Odysseus to protect him from Circe. In the Hellenistic period, after the death of Alexander the Great in 323 BCE, Hermes grew in popularity, and his feats became embellished and even more celebrated. Some have suggested that, as emissary and messenger, the god was viewed as able to mediate between worlds, the seen and unseen, and because of this his sphere of influence might have extended to divination and magic - like the Egyptian god Thoth.

Soon, the two gods had been completely conflated through interpretatio Graeca, and seen as one god. By the mid 1st century CE, Thoth was often referred to as 'Thrice Great', stemming from the Egyptian idea of composite deities with many aspects. While the exact meaning of

> In the Egyptian creation myth, Thoth adds five days to the year, allowing Geb and Nut to procreate, and birth more gods

The mysterious Book of Thoth

The *Book of Thoth* was said to have been written by the god himself. The 'book' is thought to have actually been a collection of texts, 42 books, in six categories, that were said to contain all of the philosophical knowledge of the Egyptian people. The work is referred to by Clement of Alexandria at the end of the second century CE, who attributes the works to Hermes. The books were thought to have been translated into Greek, and updated with Greek ideals. It's said that books covered the laws, deities and priestly instruction; instructions for how to serve the gods; knowledge of the geography of the world and writing; astrology and astronomy; religious compositions; and, finally, knowledge of medicine. While some have tried to include the *Book of the Dead* as part of the *Book of Thoth*, this was never accepted by the majority since he is only credited with writing part of it.

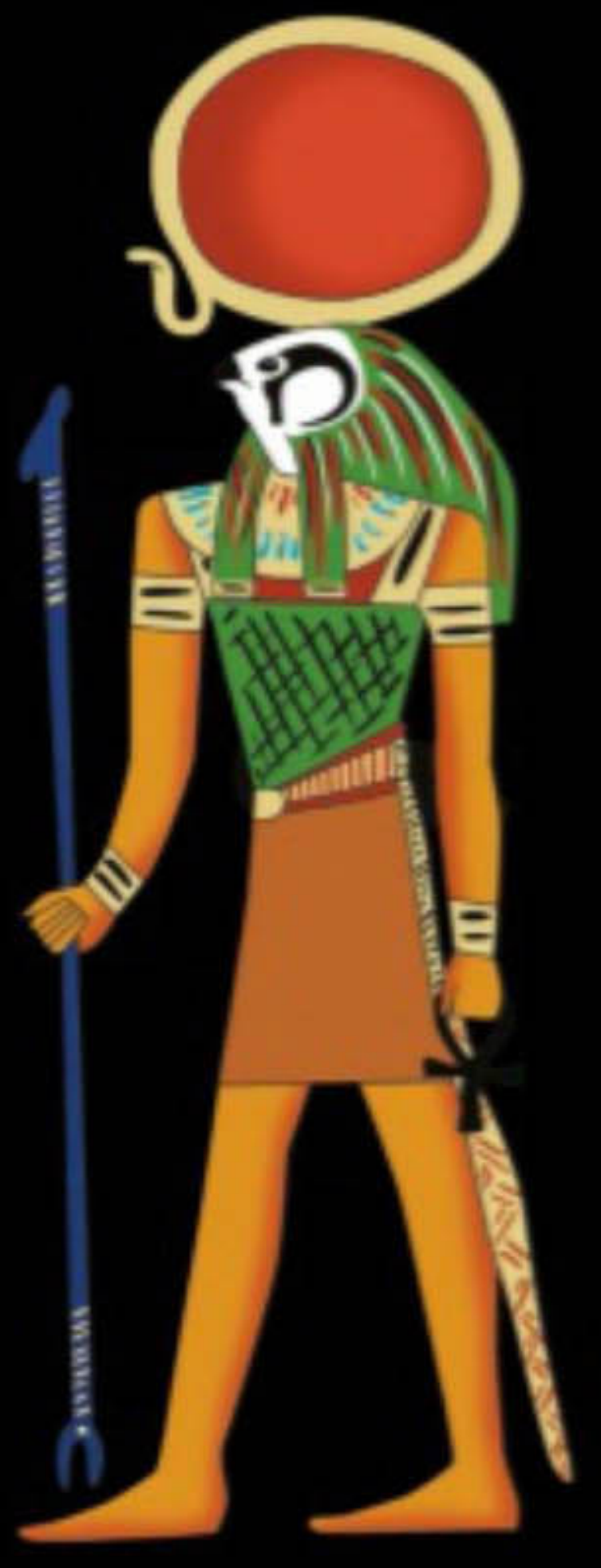
An account of a fictional *Book of Thoth* appears in the Ptolemaic period, and states that it contains a spell to understand the language of animals, and another to perceive the pantheon of deities; this copy was originally kept in a series of locked boxes, guarded by serpents, and hidden at the bottom of the Nile. An Egyptian prince stole the book, and in retribution Thoth killed his wife and son, leading the prince to commit suicide. Many years later, another man is seduced into killing his own children after stealing the book, yet this turns out to be an illusion to shame him into returning it. He does this, only to find the bodies of the prince's wife and son, which he buries. The tale teaches that humans are not meant to have all the knowledge of the gods.

The *Book of Thoth* was thought to have been written by the god himself, recording his knowledge of all things

Meet the gods of Egypt

Almost 1,500 deities are known by name and many of them combine with each other and share characteristics. Here are some of the most important

To the Egyptians, writing was sacred as it gave reliability, and enabled all knowledge of the world to be recorded



Ra

God of the Sun

Ra was Egypt's most important Sun god, also known as Khepri when rising, Atum when setting and the Aten as the solar disc. As the main creator deity, Ra also produced twin gods Shu and Tefnut.

Geb

God of the Earth

As the grandson of Ra and the son of Shu and Tefnut, green-skinned Geb represented the Earth and was usually shown reclining, stretched out beneath his sister-wife Nut.

Nut

Goddess of the sky

As granddaughter of Ra, Nut was the sky goddess whose star-spangled body formed the heavens, held above her brother Geb by their father Shu, god of air.

Isis

Goddess of motherhood and magic

The daughter of Geb and Nut, Isis was the perfect mother who eventually became Egypt's most important deity, 'more clever than a million gods' and 'more powerful than 1,000 soldiers'.

Osiris

God of resurrection and fertility

Isis's brother-husband Osiris was killed by his brother Seth, only to be resurrected by Isis to become Lord of the Underworld and the god of new life and fertility.

Horus

God of Kingship

When his father Osiris became Lord of the Underworld, Horus succeeded him as king on Earth, and became the god with whom every human pharaoh was then identified.

Seth

God of storms and chaos

Represented as a composite mythical creature, Seth was a turbulent god who killed his brother Osiris, only to be defeated by Osiris's son and avenger Horus, helped by Isis.

Nephthys

Goddess of protection

As fourth child of Geb and Nut, Nephthys was partnered with her brother Seth, but most often accompanied her sister Isis as twin protectors of the king and of the dead.

The animal cults of ancient Egypt

The Egyptians greatly respected the natural world, particularly animals whose spirits were worshipped as divine. With Egypt's earliest known art representing animals alongside humans, various creatures were placed in human burials as early as c. 4000 BCE, and the relationship was a fundamental part of Egypt's evolving religion.

Gods could be portrayed entirely as an animal, or in human (anthropomorphic) form with an animal's head, as imitated by masked priests. Many deities also had a sacred creature, which was worshipped in life then mummified at death.

The most important of these was the Apis Bull of Memphis. Believed to house the soul of the creator god Ptah when alive, it was then worshipped as the underworld god Osiris after its death when the next bull was selected to continue the cycle. Other sacred bulls and cows were worshipped elsewhere in Egypt, with other animal cults including the sacred crocodiles of Sobek, representing the power of the king, and the sacred rams of the creator god Khnum. There were also the ibis and baboons representing the god Thoth, and the cats sacred to the feline deity Bastet. Such creatures were mummified in their millions as physical manifestations of the divine and symbols of Egypt's devotion to its creatures.

Images source: Alamy

Ptah

God of creation and craftsmen

Ptah was a creator god and patron of craftsmen whose temple at Memphis, known as the 'House of Ptah's Soul' – 'hut-ka-ptah' – is the origin of the word 'Egypt'.

Thoth

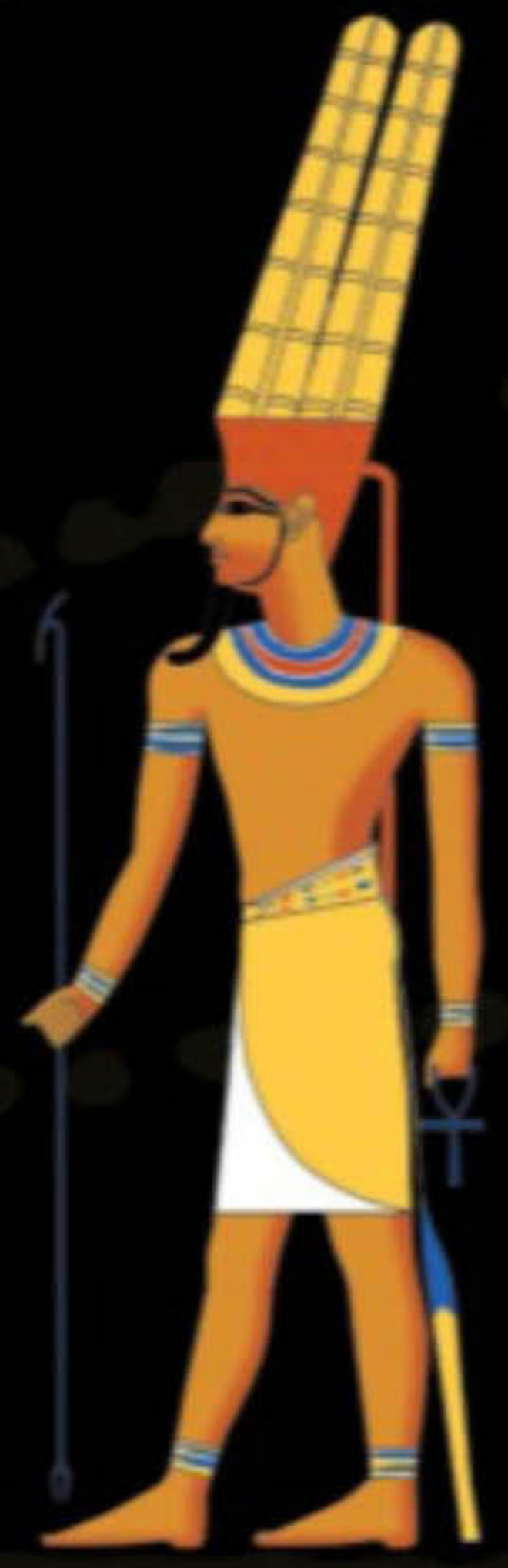
God of learning and the Moon

As the ibis-headed god of wisdom and patron of scribes, Thoth invented writing and brought knowledge to humans. His curved beak represented the crescent Moon, and his main cult centre was Hermopolis.

Neith

Goddess of creation

As a primeval creator deity represented by her symbol of crossed arrows and shield, warlike Neith, 'Mistress of the Bow', was worshipped at her cult centre Sais in the Delta.



Amun

God of Thebes

Initially the local god of Thebes, whose name means 'the hidden one', Amun was combined with the Sun god Ra to become Amun-Ra, king of the gods and Egypt's state deity.

Hathor

Goddess of love, beauty and motherhood

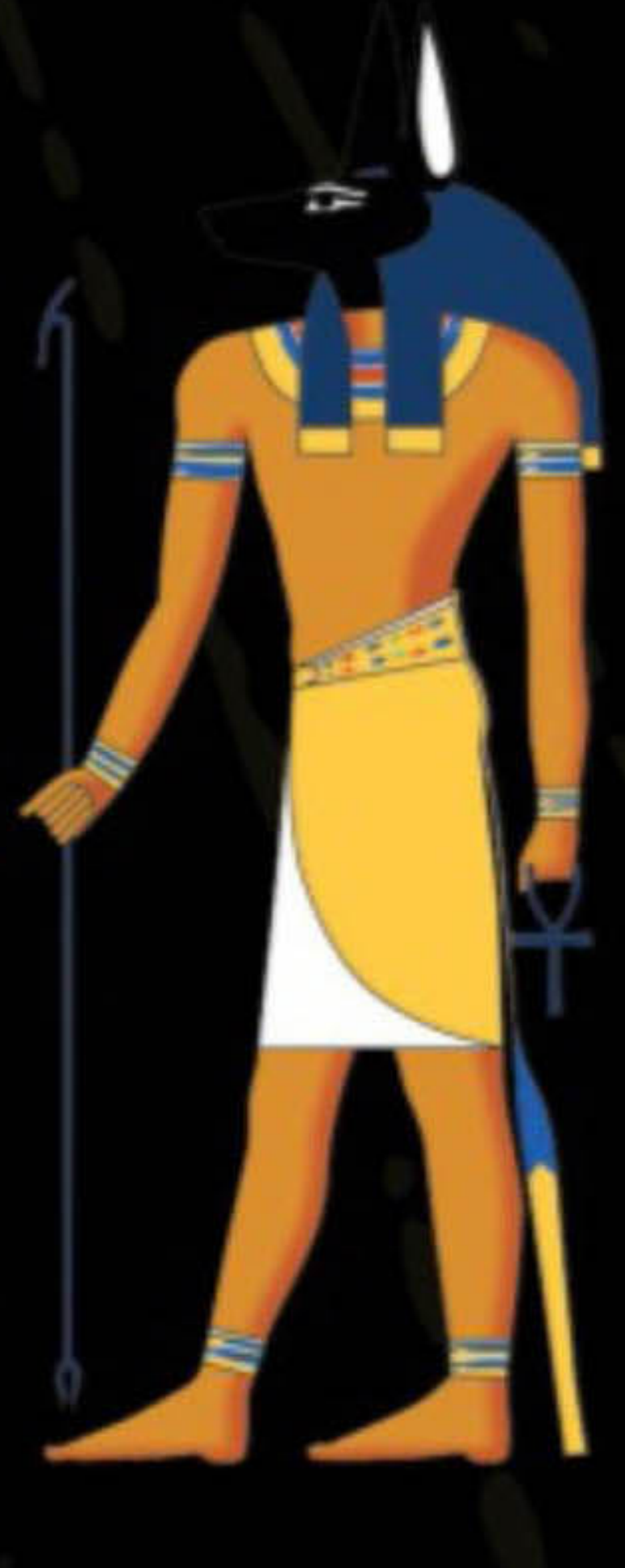
Often represented as a cow or a woman with cow ears, Hathor symbolised pleasure and joy and as a nurturing deity protected both the living and the dead.

Sekhmet

Goddess of destruction

The lioness goddess Sekhmet controlled the forces of destruction and was the protector of the king in battle. Her smaller, more kindly form was Bastet the cat goddess, protector of the home.

> "Gods could be portrayed in animal or human form, or as a human with an animal's head"



Anubis

God of embalming and the dead

The black jackal god Anubis was the guardian of cemeteries and god of embalming, who helped judge the dead before leading their souls into the afterlife.

Taweret

Goddess of the home and childbirth

Taweret was a knife-wielding hippopotamus goddess who guarded the home, a protector of women and children who was invoked during childbirth to scare away evil forces.

Bes

God of the home and childbirth

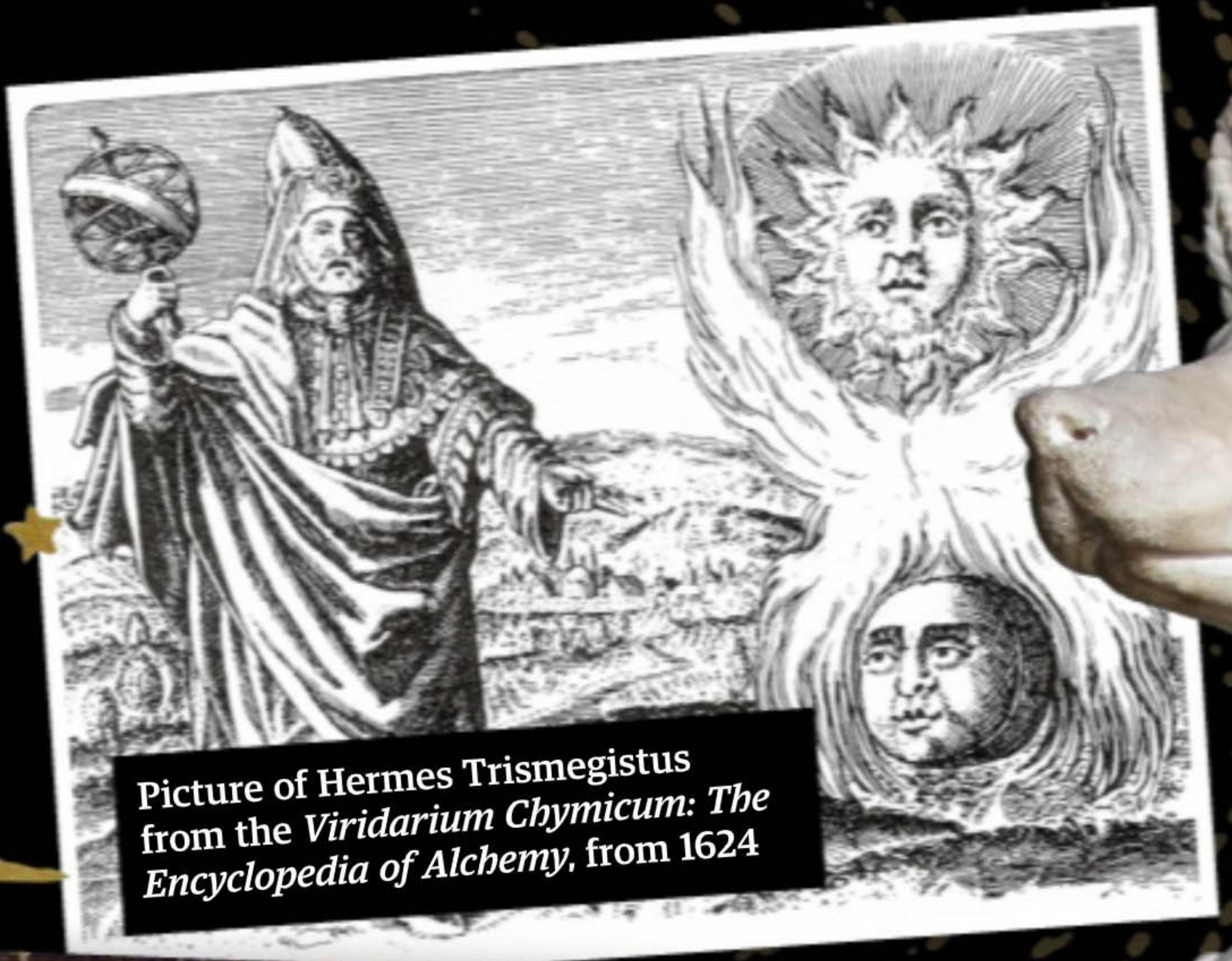
Bes was a dwarf-like god of the household who protected women and children alongside Taweret. Like her carrying knives for protection, in his case he carried musical instruments for pleasure.

Maat

Goddess of truth and justice

As the deity who kept the universe in balance, Maat's symbol was an ostrich feather against which the hearts of the dead were weighed and judged in order to achieve eternal life.

Greek god Hermes, the son of Zeus


Picture of Hermes Trismegistus from the *Viridarium Chymicum: The Encyclopedia of Alchemy*, from 1624

Hermes Trismegistus is depicted on the floor of the Cathedral of Siena in Italy

Hermanubis combined psychopomps Hermes and Anubis, resulting in a god of truth and the priesthood

'Thrice Great' is still unknown, we can understand Thoth's importance as the personification of the mind of god, and the god who organises and directs all governing forces of the known universe; the veneration of this god was some of the greatest in the land, and might go some way to explaining such a grand epithet. Most attribute the first instances of this name as appearing in the writings of Athenagoras of Athens and in a fragment from Philo of Byblos, while others take this back to Egyptian cult texts from the 2nd century BCE. Through this three-fold aspect of Thoth, and his association with Hermes, the composite – and more complex – figure of Hermes Trismegistus was born. The 10th century *Suda*, a Byzantine encyclopaedia, explains that Hermes was given the name of Trismegistus because there is one divine nature within the trinity; we can view this in a similar way to how Christianity has the divine trilogy of God, Jesus and the Holy Ghost, who are all separate yet integral.

Hermes Trismegistus was patron of philosophy, alchemy, magic and astrology, and credited as the instigator of one the most mystical philosophies known to date. Historically, many considered Hermes Trismegistus to be an actual figure: a wise prophet, a contemporary of Abraham. Only one thing is for certain, the figure of Hermes Trismegistus is shrouded in mystery, yet credited with passing down sacred and ritual knowledge. Some say he wandered the lands of Egypt before even the time of Moses. Others believed that he was a contemporary of Abraham, passing on sacred knowledge to him. Others considered him one of a long line of prophets, passing on the one truth – the prisca theologia – from God, in the same vein as the Persian Zoroaster, and some believe he is an ancestor of the Prophet Muhammad himself.

> Alchemy was the study of how to turn one substance, like base metals, into another – for instance, gold

Hermes Trismegistus was believed to be the author of countless texts conveying ancient wisdom. Many say he is the author of the 42 books previously credited to Thoth, while Plato mentioned a hall containing 9,000 years of ancient wisdom at the Temple of Neith, at Sais in the Nile Delta. Some of these texts are collectively referred to as the *Hermetica*, which detailed knowledge of magic, the universe and the mind, in the form of a dialogue between a master and student – indeed the master was Hermes Trismegistus himself. This body of work became the basis of Hermeticism, dealing with magical plants and gemstones, making talismans, summoning spirits, with astrology and the drawing down of the stars. One of the most important of the *Hermetica* texts was the *Asclepius*, which explained how to trap demons and spirits inside statues, while his *Poimandres* from the *Corpus Hermeticum* detailed the creation of the world by the Son of God, known as the Word, reminiscent of the biblical Genesis. These texts are generally thought to originate between 100 to 300 CE, and can be divided into two types: those dealing with philosophy, and those dealing with magic. Hermeticism focused on using magico-religious practices to transcend the constraints of the physical body. These teachings became popular through the Hellenistic period, linked to Platonism and Stoicism, with an element of Jewish and Persian influences, and saw a revival with the alchemy of the Middle Ages, right through to the Renaissance.

Various legends about the comings and goings of Hermes Trismegistus have been developed over the centuries. Some say that Hermes Trismegistus appeared in Islamic literature, in the form of the prophet Idris, with his writing being recorded by Ikhwan al-Safa, a secret society of Muslim philosophers translated as 'The Brethren of Purity'. Others go so far as to claim that he travelled from Egypt to visit advanced races living in outer space, and even to Heaven itself, before returning to Earth; he is also credited with building the pyramids at Giza. The *Emerald Tablet* sheds light on these beliefs, as it is seen as one of the foundations of Hermetic practice written by Hermes Trismegistus himself. The tablet is associated with the secret of the prima materia and the Philosopher's Stone. Although the origin of the tablet is murky, many believe it is another example of a source credited with being older than it actually is, and in reality the first reference to it is an Arabic text dating to between the 6th and 8th centuries: *The Book of Balinas the Wise on the Causes*. Legend tells that the tablet was found in the arms of a corpse, seated on a golden throne under a statue of Hermes in Tyana. The tablet was not translated into Latin until the 12th century, and a translation was found amongst Isaac Newton's papers, and it was picked up extensively by later mystical scholars, with whom it remains popular.

While the belief that the texts – and indeed the figure of Hermes Trismegistus – were ancient, an analysis by Isaac Casaubon in the 17th century examined the language used, and revealed that these were indeed much later than believed and could not have been written by the mystical prophet. This opinion has since been challenged by many.

In conclusion, it seems that the texts attributed to the ancient prophet were Egyptian-Greek texts written by multiple authors from the first and second century CE and after, incorporating beliefs and texts from much earlier Egyptian traditions linked to the god Thoth, and indeed updated to incorporate Greek ideas, initially for the political aim of social integration and the acceptance of a new branch of rulers in Egypt. The figure of Hermes Trismegistus did indeed act as a much needed historical basis for the tradition, and drew together the disparate ideas, neatly packaging them as a coherent belief system with a central figure. While the validity of Hermes Trismegistus and his writings are highly questionable, and an absolute falsehood for most scholars, there is certainly no doubt that his influence has reached far and wide, across continents and across history, to capture the imaginations of many, and create a mystical tradition that countless people still adhere to today.

> The macrocosm-microcosm theory teaches that the 'part reflects the whole' throughout the cosmos – 'as above, so below'

Crowley's Thoth tarot deck

The Thoth tarot was a deck published by Ordo Templi Orientis in 1969, after both of the creators had passed away. Painted by Lady Frieda Harris, based on mystical instructions from Aleister Crowley, it was paired with his book on the deck, *The Book of Thoth*, written between 1938 and 1943. The depictions on each of the cards are inspired by various mystical systems, as well as philosophy and science, in an attempt to reinvigorate and reinterpret the traditional meanings, as is encouraged for all initiates to the Order of the Golden Dawn as part of their spiritual journey. Crowley changed many of the Major Arcana names, as well as renaming pages to princesses, and knights to princes in the Court Cards. Another major difference in the deck is that he modified the corresponding Hebrew letters and astrological associations of the cards, based on his own reading of their symbolism in line with his teaching in his *Book of the Law*. He also gave a title to each of the Minor Arcana cards. While the accompanying book is meant to act somewhat as an instruction manual, Crowley's deck is infamous for its mystic nature and inaccessibility for the uninitiated. A modified version of the deck, including two original cards by Lady Frieda Harris but rejected by Crowley, is still available from U.S. Games Systems.

The Thoth tarot deck is still incredibly popular with people today, seen to hold great divinatory wisdom

Ptolemy I Soter depicted as the Pharaoh of Egypt, now in the British Museum, London

Images source: Alamy, Wiki, Getty

The four elements

We reveal the intricate and multifaceted nature of a concept key to the philosophy and practice of alchemy

Written by Paul Walker-Emig

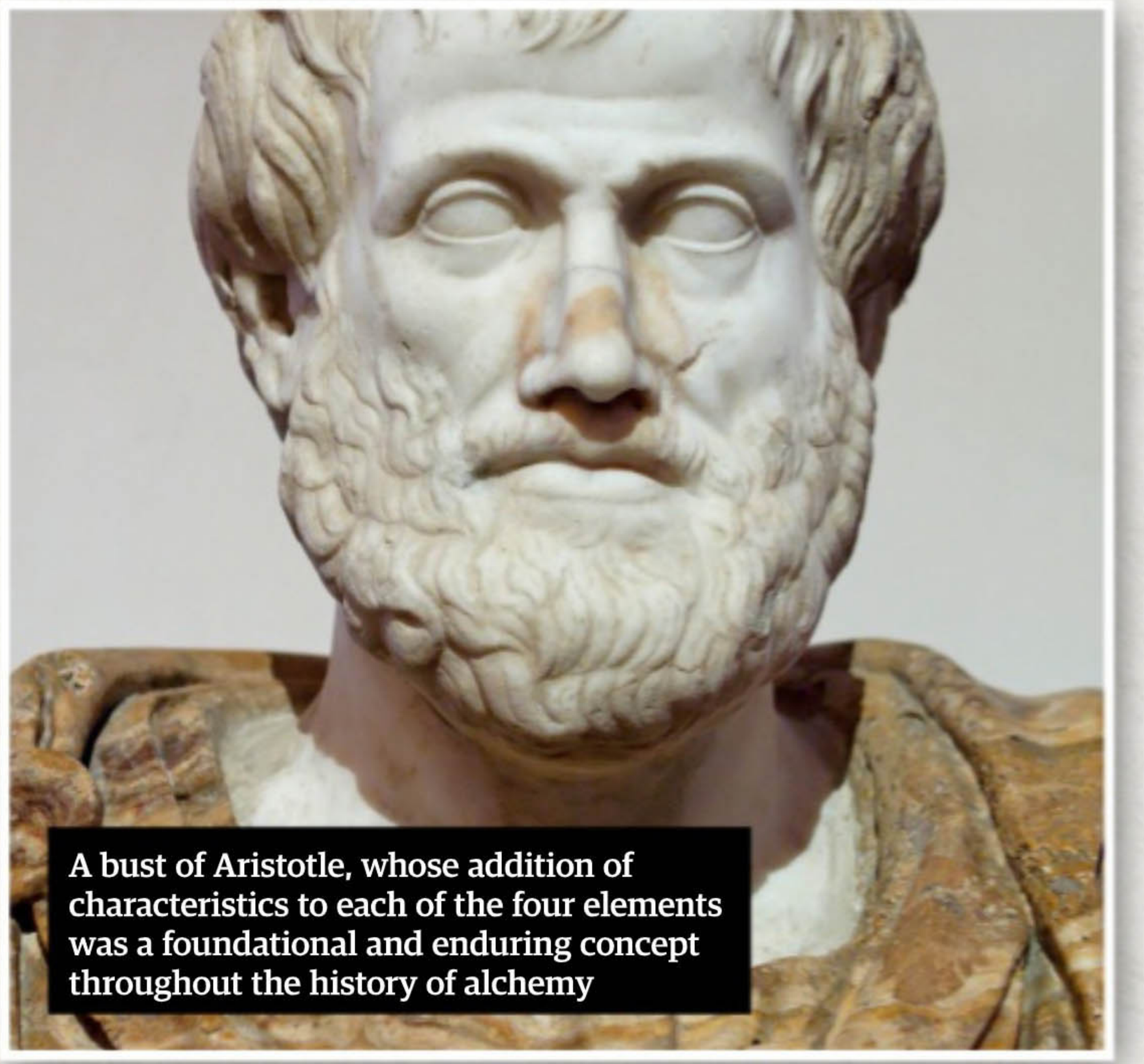
Earth, air, water, fire: almost everyone is familiar with this quartet of elements. It it testament to the power of the concept of the four elements that this idea, established back in antiquity, is still deeply embedded in modern culture.

The concept of fundamental elements existed in many of the philosophical and proto-scientific cultures that preceded alchemy, in particular, ancient Greece. The philosopher Empedocles laid down his doctrine of the four elements in around 450 BCE, arguing that all matter is comprised from these four roots. Aristotle would later expand on his work, attributing qualities of hotness and dryness to each element. Air, he argued, is hot and wet, fire is hot and dry, water is cold and wet and earth is cold and dry.

It is important to understand that the ancient Greeks, and many of the alchemists who developed their ideas, did not think about the four elements in the way that we now view elements like lead or hydrogen, through the prism of chemistry. The four elements tended to describe the quality of things, rather than the thing itself. In addition, the idea was not always meant to be taken literally. The concept often had a strong philosophical, allegorical or psychological component and was employed as such throughout the history of alchemy. However, alchemists would also develop more literal and mystical interpretations of the concept.

The influential Islamic alchemist Jabir ibn Hayyan speculated that each metal displayed two of Aristotle's qualities externally and two internally – lead was externally cold and dry and gold hot and moist, for example. Therefore, just as it is possible to turn water into air by adding heat, substituting the quality of coldness for hotness, Jabir theorised it would be possible to change one metal into another by rearranging its elemental properties. This necessarily influenced Jabir's interest in laboratorial experimentation as a means to find ways of manipulating elemental properties, and, by extension, the alchemical tradition to follow, on which his thought and practice had a huge impact.

This idea of the four elements as foundational, irreducible components from which the universe was made remained prominent in European Medieval alchemy. However, during this period the four elements also took on strong spiritual connotations. In the 13th century, alchemists commonly believed that once they had discovered a way of manipulating metals they could apply those processes to purifying the human soul and reuniting it with God.



A bust of Aristotle, whose addition of characteristics to each of the four elements was a foundational and enduring concept throughout the history of alchemy

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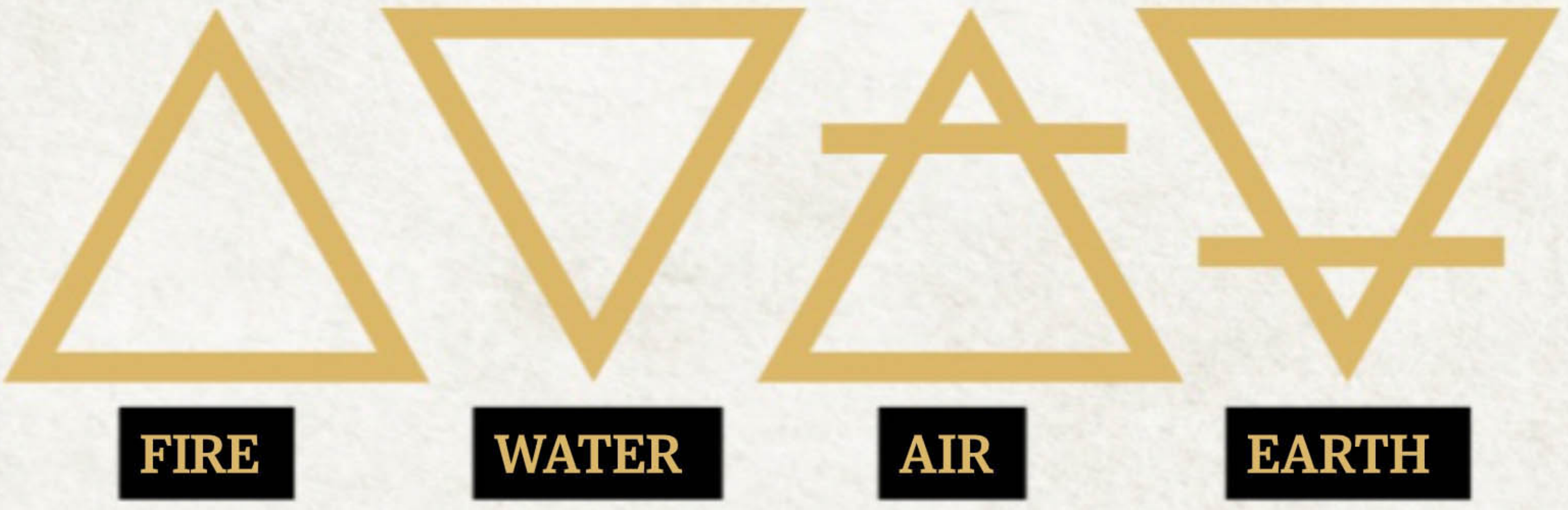
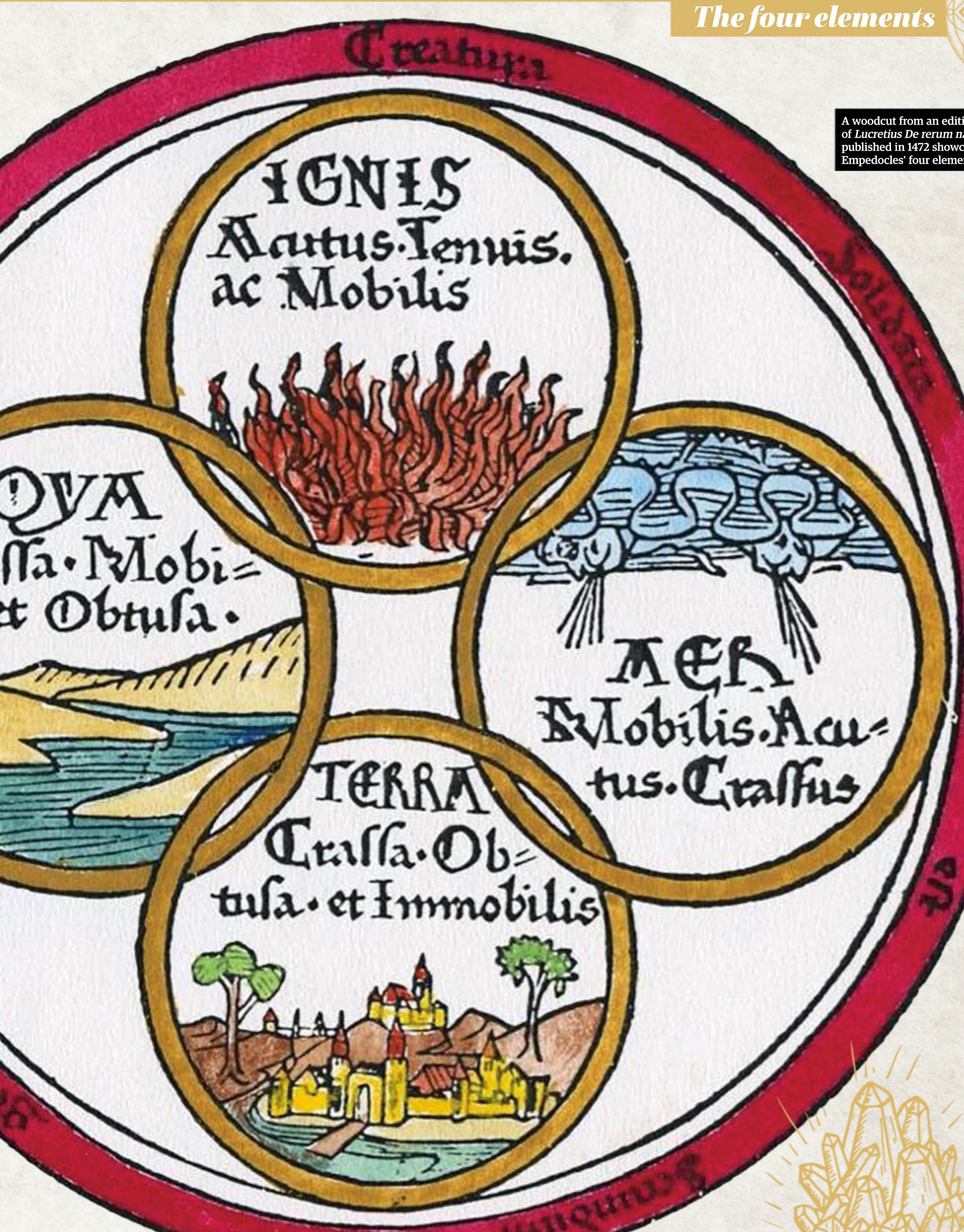
The alchemical symbols for the four elements, representing, from left to right, fire, water, air and earth





A woodcut from an edition of *Lucretius De rerum natura* published in 1472 showcasing Empedocles' four elements

Images source: Wiki

The three principles

How sulphur, mercury and salt became a fundamental part of the practice and theory of alchemy

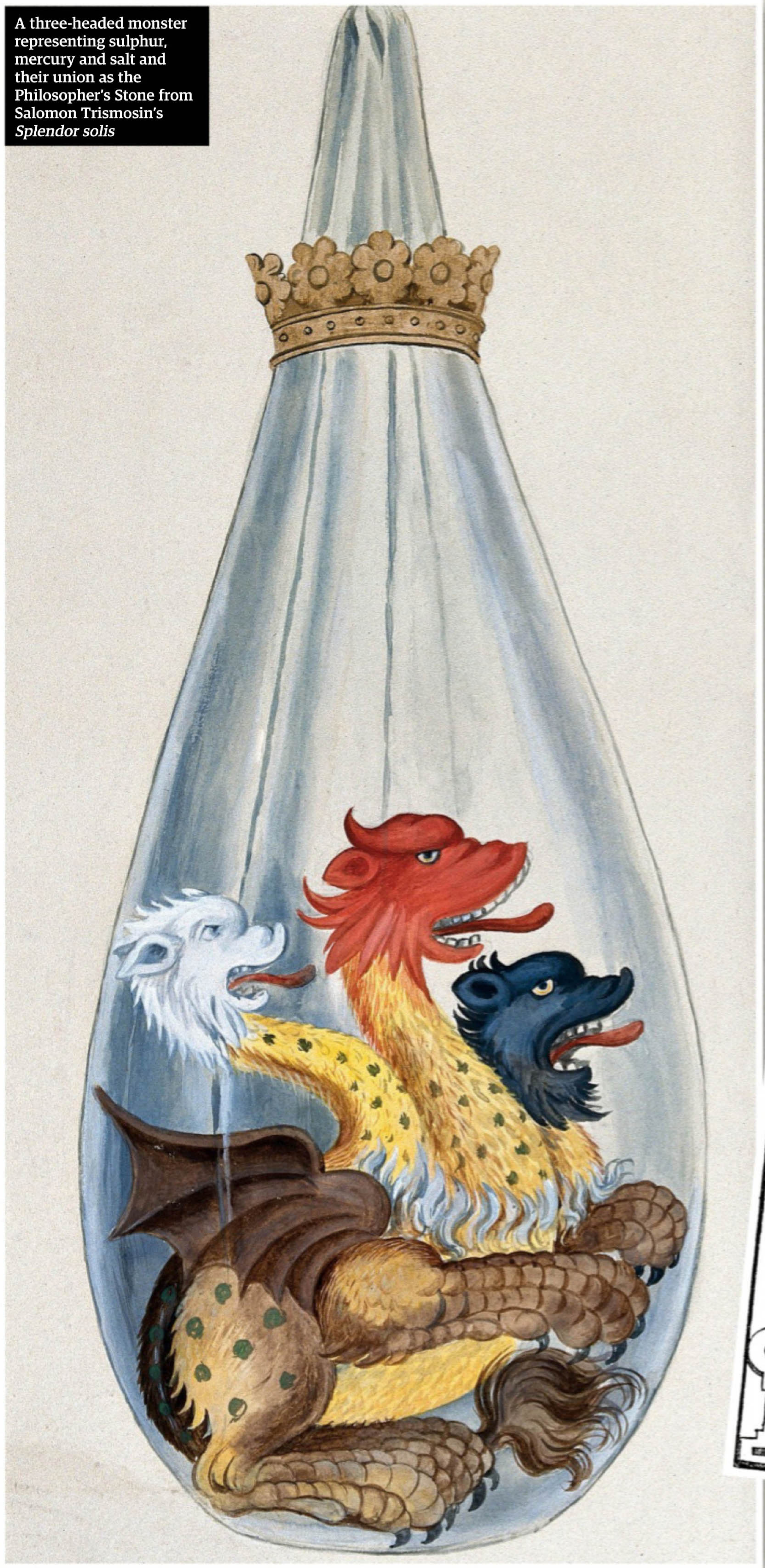
Written by Paul Walker-Emig

Complementing the idea of the four elements in alchemy are the three principles. These emerged during the Islamic Golden Age, in particular via the alchemist Jabir ibn Hayyan. To fire, water, air and earth, Jabir added sulphur and mercury. These do not refer to the substances as we understand them today. Rather, sulphur was used to symbolise the principle of combustibility, and mercury related to having metallic properties. Salt was later added to represent the condition of solidity.

> The 100-page *Splendor solis* has been described as 'the most beautiful and splendid treatise on alchemy ever made'

As the work of the Arabic alchemists was developed and expanded on by Medieval alchemists in Europe, the distinctions between these elements grew and formalised, leaving us with the four elements - fire, water, earth and air - and the three principles - sulphur, mercury and salt. Sulphur continued to be associated with combustion and salt with solidity. Mercury came to be associated with liquidity.

Nonetheless, pinning down exactly what is meant by the three principles is tricky, not only because the concept has changed over time, but because the degree to which it is being applied literally or allegorically can vary a great deal. Certainly, there were alchemists throughout European history who, taking their cues from the likes of Jabir, viewed the three principles as irreducible



A three-headed monster representing sulphur, mercury and salt and their union as the Philosopher's Stone from Salomon Trismosin's *Splendor solis*

components from which everything is made, theorising that what form a metal took depended on the balance of sulphur and mercury within it and that, if you could adjust this balance, you could transform the metal. For some, finding the Philosopher's Stone was a matter of finding the right balance of these three principles.

However, the three principles often have symbolic or spiritual associations. Salt is often associated with the body and the material, mercury with the spirit or mind, and sulphur with the soul and emotions.

The three principles were even employed in the practice of medicine. The 16th-century Swiss alchemist Paracelsus was heavily influenced by Medieval conceptions of the three principles. He believed that it was important to have balance in the body and attributed diseases to poisons that emerge from the three principles. He believed that the cure for a disease depended on which of the three principles it related to.

As a concept related to the fundamental forms alchemists were searching for in their chemical experiments, a philosophical allegory, a collection of psychological and spiritual categories, and a diagnostic tool for the practice of medicine, the three principles is a flexible concept. Even so, it is one fundamental to the practice of alchemy, in whatever form it takes.

ALTERIVS NON SIT, QVI SVVS ESSE POTEST.
AVREOLI THEOPHRASTI AB HOHENHAIM.
EFFIGIES SVÆ ÆTATIS 45.
AH

A portrait of the Swiss alchemist Paracelsus, who employed the three principles in his practice of medicine, created in 1538 by Augustin Hirschvogel

Images source: Wiki

The seven classical

Ancient alchemists incorporated the seven classical planets into their studies, noting that each planet held power over a specific classical metal

Written by Poppy-Jay Palmer

Our vast solar system may be made up of eight planets (sorry, Pluto), but only five of those planets are visible from Earth to the naked eye, and therefore only five were visible to ancient people: Mercury, Venus, Mars, Jupiter and Saturn. Those five planets, together with the Moon and the Sun, comprise what is known to astronomers as the seven classical planets. As well as heavily featuring in the natural science of astronomy, the planets also play a key role in ancient alchemy.

In the West, as well as other locations around the globe where it was widely practised, alchemy became entwined with traditional Babylonian-Greek style astrology, as the two were thought to complement each other in the search for hidden knowledge. As a result, each of the classical planets held significance with one of the seven metals known in the classical world.

The Sun was associated with gold, the Moon with silver, Mercury with mercury (or quicksilver), Venus with copper, Mars with iron, Jupiter with tin and Saturn with lead. Many alchemists still use these pairings today.

> The word 'planet' is derived from the ancient Greek 'planētes asteres', which means 'wandering stars'

Through being paired together, it is thought that each of the seven classical planets held dominion over their metals and even ruled them.

As well as being paired up with metals, some alchemists also adopted the Western Esoteric tradition of Hermetic Qabalah, a system that assigned each of the classical planets to a vital organ. Within that tradition, the Sun was paired with the heart, the Moon with the brain, Mercury with the lungs, Venus with the kidneys, Mars with the gall bladder, Jupiter with the liver and Saturn with the spleen.

Each classical planet was also awarded its own symbol, or glyph, to create a system that is still used today: the Sun became a simple circle containing a dot, a symbol that was first used as early as the Renaissance; the Moon is a black crescent; Mercury's symbol was derived from the entwined serpents that made up the caduceus; Venus is a small circle with a cross below it, which is now regularly used to represent the female sex; Mars is a circle with an arrow coming from it, used to represent the male sex; Jupiter, the king of the gods, is the letter 'zeta' (for Zeus) with a vertical stroke through it; and Saturn, once a scythe or sickle, is a letter 'eta' with a horizontal stroke.

> "The Sun was paired with the heart, the Moon with the brain, Mercury with the lungs and Mars with the gall bladder"

Images source: Getty

The classical planets consist of Mercury, Venus, Mars, Jupiter and Saturn, as well as the Moon and the Sun

planets

Alchemists believed that each of the classical planets — those visible to the naked eye from Earth — corresponded to a classical metal

Transmutation

How the search for the hidden formula to create gold preoccupied alchemists across the ages

Written by Paul Walker-Emig

The process of transmutation, or the quest to find a way to turn base metals into gold and silver, is a central part of alchemy's history. This goal has had many names: the Philosopher's Stone, chrysopoeia, and the Magnum Opus, or Great Work. Across the ages, alchemists have pursued - and some have claimed to have realised - this goal.

The idea of transmutation is usually traced back to Zosimos of Panopolis in 300 CE. He set out the stages through which the process of transmutation was to be accomplished, laying down an early template with which alchemists would continue to work for centuries.

The first of these four stages is nigredo, a blackening in which ingredients had to be cleansed through cooking to create a black material. This is followed by albedo, or a whitening, in which the impurities would be washed away. Then comes citrinitas, a yellowing of the material and, finally, rubedo, or reddening, which represented the completion of the transformation into a precious metal.

In both the Islamic and European alchemical traditions, transmutation was key. Jabir ibn Hayyan's writing brought the concept from the Islamic world to Europe, where it continued to be written about extensively. Albertus Magnus' 13th-century *Book of Minerals* was concerned with the subject, and it was still being written about in the 17th century by the likes of Nicolas Flamel, who wrote about the processes of transmutation, perhaps unsurprisingly, without ever giving an actual formula.

Transmutation was sometimes a controversial subject. In 1317, Pope John XXII released an edict forbidding the practice, criticising fraudulent alchemists for exploiting the poor with false promises of wealth. Alchemists

> Hailed as the father of chemistry, Jabir ibn Hayyan penned the oldest known classification of chemical substances

This 17th-century engraving shows a man and a woman kneeling in front of a furnace where transmutation is about to take place

This woodcut from 1503 shows an alchemist at work attempting to transmute metals

> "In both the Islamic and European alchemical traditions, transmutation was key. Jabir ibn Hayyan brought the concept to Europe"

themselves also criticised their own peers. 16th-century alchemists Michael Maier and Heinrich Khunrath wrote about fraudulent claims of transmutation from other alchemists, which they deemed counterproductive to their own work.

The concept of transmutation was not always taken so literally, however. The process was also often used symbolically, taking on spiritual or psychological dimensions. The goal was not literally to create gold but to attain some kind of balance, completeness or enlightenment in mind or soul. Seen through this lens, nigredo represented a symbolic death of the old self, albedo a purification, citrinitas the bringing of light or a new awakening, and rubedo, again, the completion of the process. The two could also be linked. Some alchemists believed that by uncovering the secret of transmutation by working with metals they would also uncover the secret to transforming the soul.

Taken from Solomon Trismosin's *Splendor Solis*, this knight sports four colours representing the process of transmutation on his breast: black, white, yellow and red

Images source: Wiki

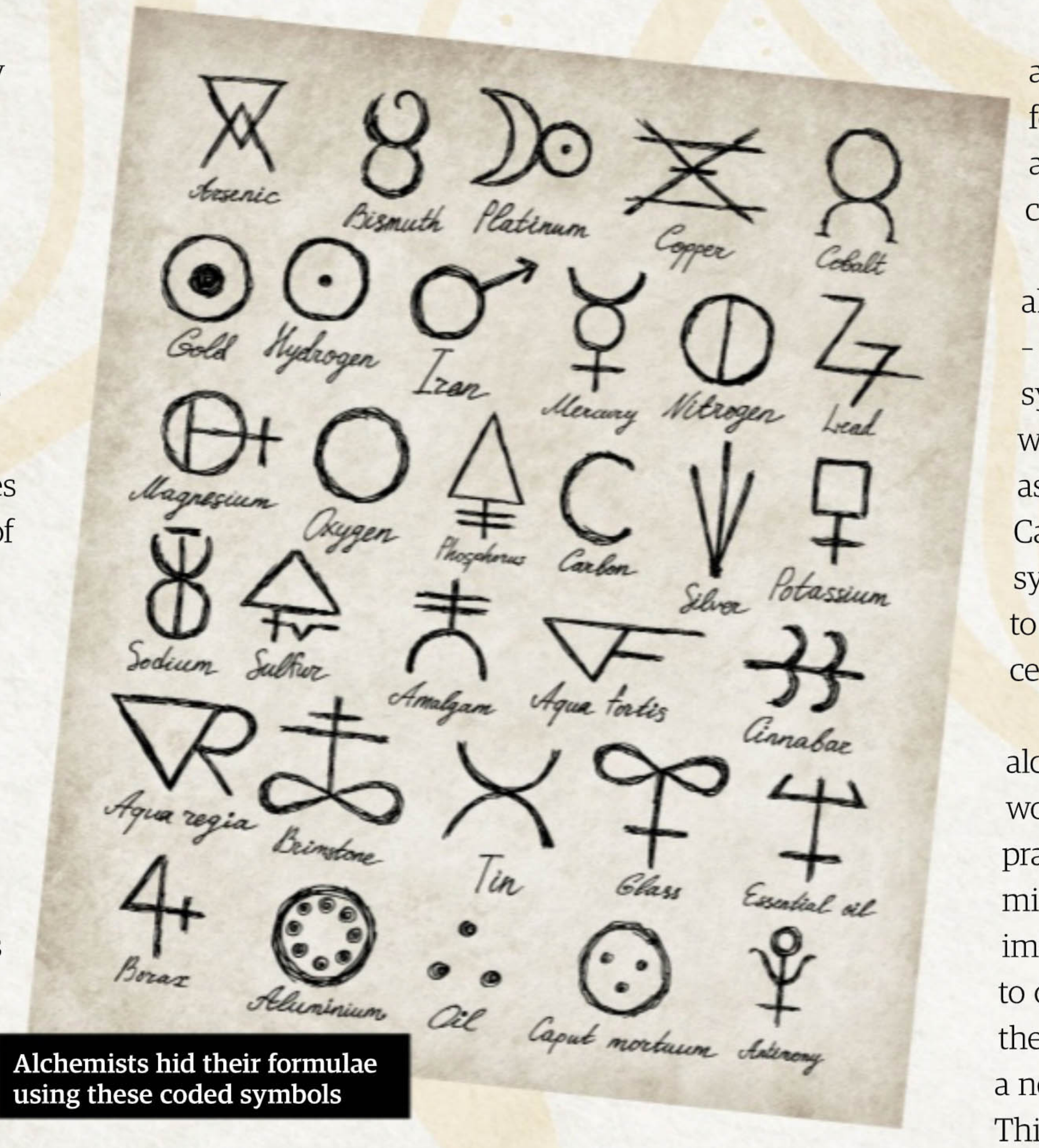
Symbols and secrets

Decoding the mysterious signs and symbols that alchemists used to hide their greatest secrets

Written by Paul Walker-Emig

Part of what makes alchemy so fascinating is its sense of mystery. It owes its enigmatic aura in large part to the series of signs and symbols used to represent different elements and processes, or even hide its knowledge from the uninitiated. When we see these mysterious signs, we can't help but think of clandestine codes, conspiracies and ancient secrets, inaccessible to those of us who don't have the key to this hidden knowledge. Fortunately, we can help you strip back some of the layers of mystery.

Alchemical symbols function as a shorthand for elements, processes, units and so on. Foundational elements in the philosophy of alchemy each have their own sign. The four elements – fire, water, air and earth – are represented by symbols based on triangles and inverted triangles, and the three principles – mercury, salt and sulphur – each have a symbol too. Outside of these more conceptual elements, alchemy also has symbols for elements as we would understand them today. There are seven metals associated with seven planetary bodies, which, again, each have their own symbol shared with astrology. Lead is associated with Saturn, tin with Jupiter, iron with Mars, gold with Sol, or the Sun, mercury, or quicksilver, with Mercury and silver with Luna, or the Moon.

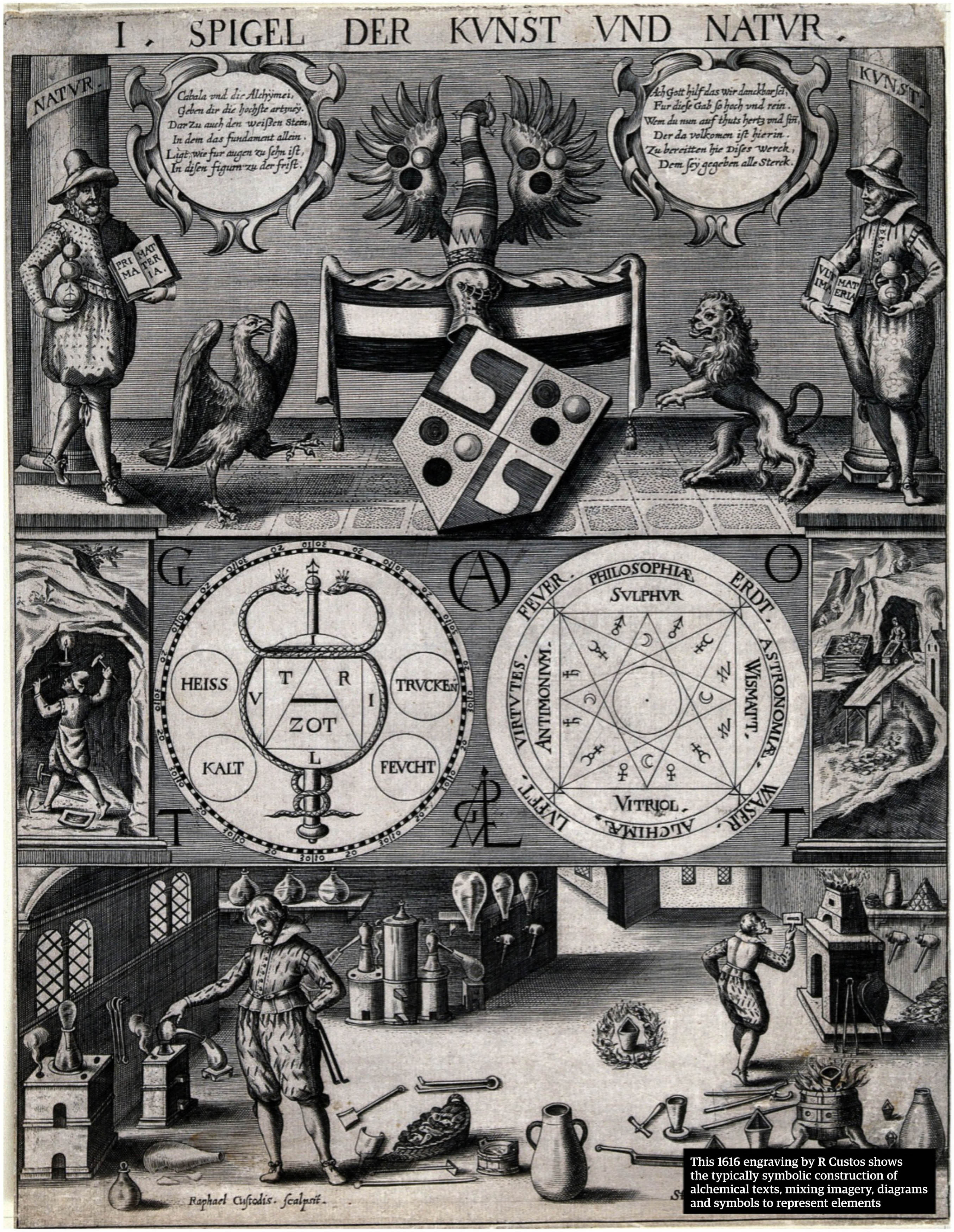


Alchemists hid their formulae using these coded symbols

Symbols also exist for what were known as the 'mundane elements', such as arsenic and zinc, and key alchemical compounds. Aqua fortis, which we know as nitric acid, and sal ammoniac, which we know as ammonium chloride, are a couple of examples.

Complementing these elemental symbols, alchemists also developed symbols for units – pounds, drams etc – and for processes. The symbols for these processes are associated with signs of the zodiac. Distillation is associated with Virgo, fermentation with Capricorn, and so on. As a combination, these symbols could be used as a kind of recipe to provide instructions on how to perform certain procedures or create materials.

However, symbols were also used by alchemists to deliberately obfuscate their work, so that only those initiated in the practice could decode them. They would mix symbols with coded terms, allegorical imagery, complicated diagrams and allusions to other works to make them impenetrable to the layman, making knowledge and training a necessary prerequisite for decoding the text. This wasn't just about hiding secrets though; striving for enlightenment was important to many alchemists too. From this perspective, constructing their texts in such a complex way required the reader to undertake their own journey from ignorance to knowledge.


I. SPIGEL DER KVNST VND NATVR.
NATVR.
KVNST.
Cabala vnd die Alchÿmei,
Geben dir die hochſte artzneÿ.
Darzu auch den weißen Stein,
In dem das fundament allein.
Ligt, wie fur augen zu ſehn iſt,
In diſen figurn zu der friſt.
Ach Gott hilf das wir danckbar ſei,
Fur dieſe Gab ſo hoch vnd rein.
Wen du nun auf thuts hertz vnd ſin,
Der da volkomen iſt hierin.
Zu bereitten hie diſes werck,
Dem ſeÿ gegeben alle Sterck.
PRIMA MATERIA.
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ALCHIMÆ.
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FEVER.
SVLPHVR
WISMATT.
VITRIOL.
ANTIMONIVM.
Raphael Cuſtodis. ſculpſit.

This 1616 engraving by R Custos shows the typically symbolic construction of alchemical texts, mixing imagery, diagrams and symbols to represent elements

Images source: Wiki, Shutterstock

Mothers of alchemy

Alchemy and the exploration of hermetical ideas was far from just the province of men; two women in particular were among the earliest alchemical practitioners

Written by Willow Winsham

Throughout the long history of fascination with alchemical ideas, there are several women of note who are credited with forming the very early precepts of hermetical understanding and belief.

One of these was the pseudonymously named Cleopatra the Alchemist. Thought to have lived during the 3rd century CE, 'Cleopatra' was a Greek philosopher, writer and, as her name implies, alchemist. It is possible that Cleopatra was not just one person but may have been the name behind which a group of writers operated. One of the founding figures of alchemy, and one of four women alchemists said to have been skilled enough to make the Philosophers Stone, it has also been suggested that Cleopatra invented the distillation apparatus the alembic.

The most important document linked to Cleopatra is the *Chrysopoeia of Cleopatra*. This artefact, a single sheet covered in symbols, includes eight-sided stars, that, along with crescents, represent the transmutation of lead to silver, and the Ouroboros – the snake eating its own tail – the well-known sign of eternal being and renewal.

Another founding mother of alchemy is Mary Hebraica, also known as Mary the Jewess or Prophetess, or Daughter of Plato. The first alchemist of the West, there is some debate over when she lived and worked, but most sources suggest between the 1st and 3rd centuries.

Unfortunately, Mary's own writings have failed to survive. Very little indeed would be known of her at all if not for the 4th-century writings of Zosimos of Panopolis, in which the works of Mary are supposedly quoted. In his work, this Gnostic Christian writer recorded details of Mary's experiments and the equipment that she is credited with inventing. Supported by later writings of George Syncellus in the 8th century and *Kitāb al-Fihrist* in the 10th century, the latter lists Mary in the top 52 most famous alchemists.

Phrases and concepts attributed to Mary include the union of opposites, and she is often credited with the invention of the tribikos, a three-armed alembic; kerotakis, an air-tight container used to heat ingredients during experiments; and the double boiler bain-marie, or 'Mary's Bath', that was invaluable for gently heating substances.

A popular legend attached to Mary is that she is said to have discovered hydrochloric acid. As intriguing as this idea might be, there is no concrete proof of Mary's involvement, and the idea is not supported by the scientific community.

Images source: Alamy

The Philosophers' Stone, the holy grail of alchemical experimentation, was believed to turn be a substance capable of transforming base metals into silver and gold

Zosimus is said to have lived in the golden years of Graeco-Egyptian alchemy, living after the legendary authors yet before the commentators

Written in Greek, the *Suda* contains 30,000 entries. Its name is derived from the Byzantine word for 'fortress'

Zosimus of Panopolis

Was Zosimus the first authentic alchemist of Western tradition and the author of the oldest alchemical works?

Written by Dee Dee Chainey

Renowned Graeco-Egyptian alchemist and mystic Zosimus of Panopolis is believed to have lived from the end of the 3rd century into the beginning of the 4th century. Some suggest the beginnings of Western alchemy date back to the Hellenistic period – the 600 years preceding this time – yet many credit Zosimus as the first expert in the field that can be truly claimed as authentic.

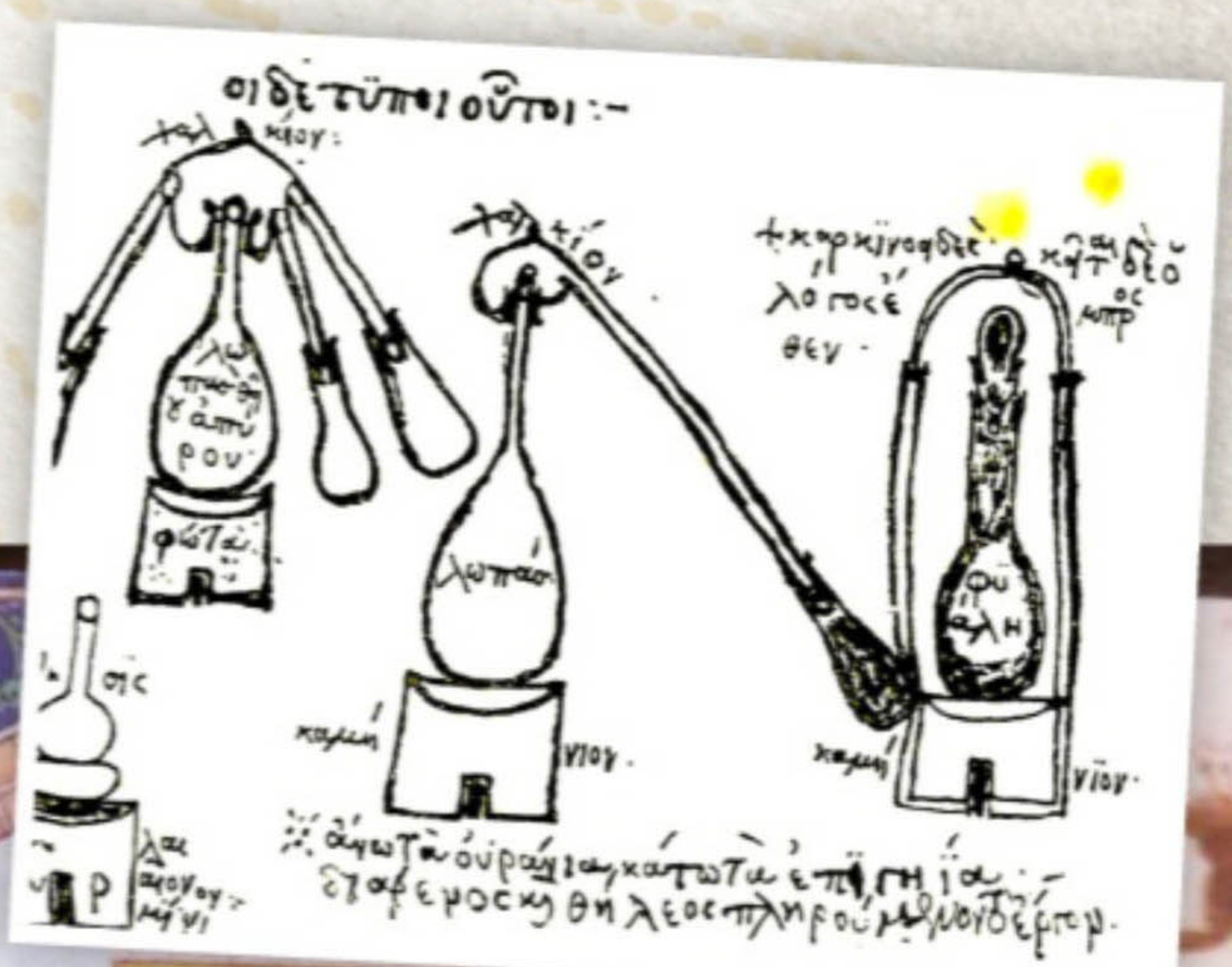
Zosimus appears in the *Suda*, a world-renowned 10th-century Byzantine encyclopaedia, which indicates that he was of Alexandrian origin. Yet, all other mentions of the man suggest that he was either from the Thebaid region of Egypt or Panopolis specifically. Some suggest the discrepancy may be because Zosimus lived in Alexandria at some point, causing the confusion. Yet while piecing together a full image of the man himself is difficult, appreciating the impact of his work on alchemical thought is anything but.

A corpus of alchemical texts is believed to have been put together in Constantinople, or Byzantium, in the 7th or 8th century CE. It is made up of texts from an estimated 40 authors; Zosimus is one of them. Remnants of his vast body of written works now only remain in fragmented form within this corpus. Singling out sections by Zosimus himself from the larger body is a daunting task, as his work is intermingled with that of other figures, and some of the surviving texts have also been damaged over time. However, the works of Zosimus of Panopolis preserved from these texts have been categorised as follows: *The Authentic Memoirs*, *The Chapters to Eusebia*, *The Chapters to Theodore*, and *The Final Count*. Remnants of some of Zosimus' works also appear in Arabic, Latin and Syriac translations.

Strikingly, many claim he wrote the oldest alchemical works in existence, which he called *Cheirokmeta*, from the Greek meaning 'things made by hand'. This, along with an accompanying 27 books attributed to him by the *Suda*, which no longer exists, are only known due to later allusions by Zosimus and a handful of other authors.

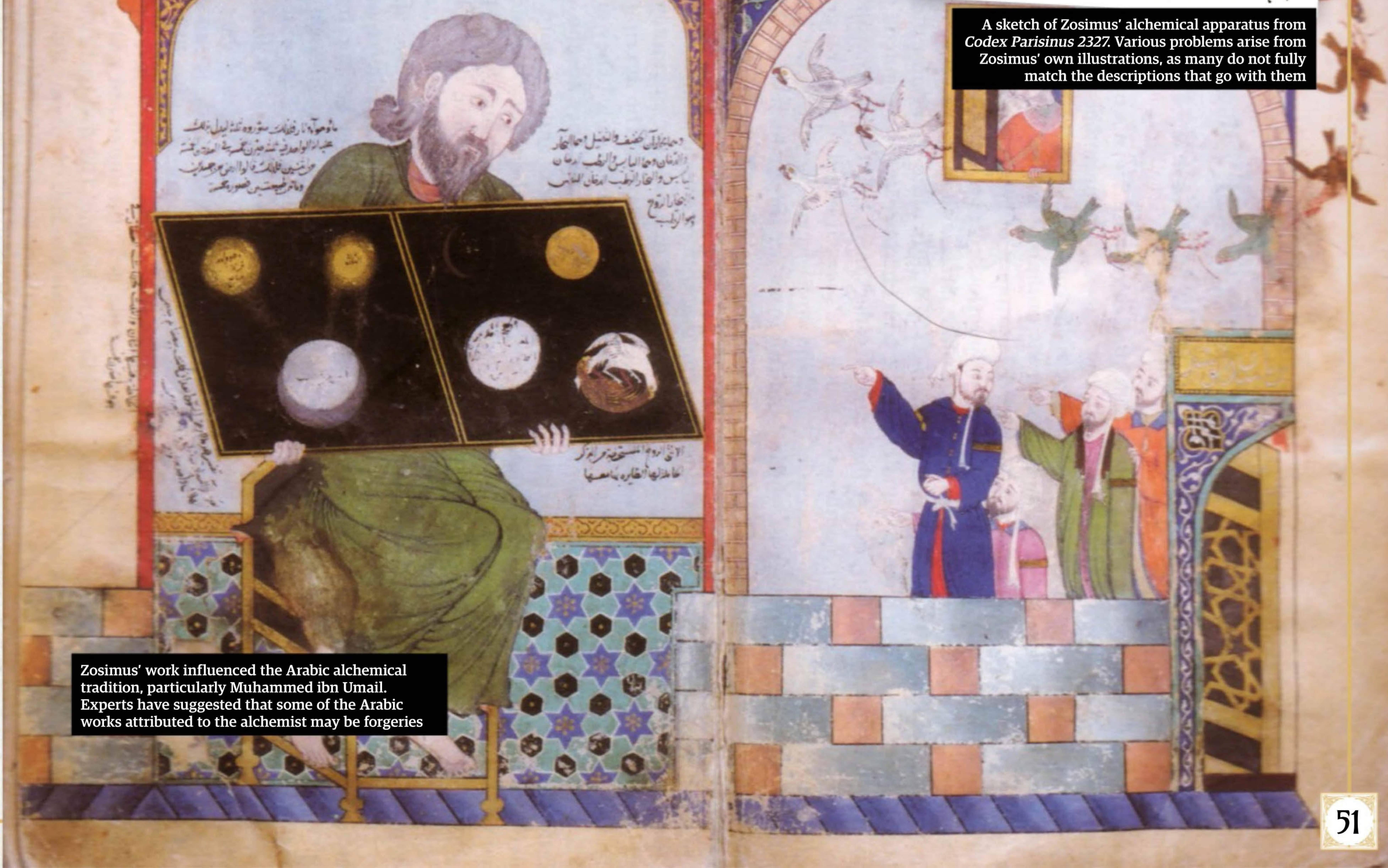
Zosimus can be connected to many descriptions of technical apparatus used in alchemy, a large focus of his work. He also wrote in length about a substance known as 'the divine water', which was used for the transmutation of metals and other substances, the preoccupation of all alchemists.

However, many suggest that before Zosimus the focus of alchemical study was technical, yet he added a new focus, mixing mysticism with technical application to add a more spiritual direction. He saw similarities between the transmutation of substances and the divine spark of human life itself; for him, the act of performing alchemy was to raise and transform human nature.



A sketch of Zosimus' alchemical apparatus from *Codex Parisinus 2327*. Various problems arise from Zosimus' own illustrations, as many do not fully match the descriptions that go with them

Images source: Wiki



Zosimus' work influenced the Arabic alchemical tradition, particularly Muhammed ibn Umail. Experts have suggested that some of the Arabic works attributed to the alchemist may be forgeries

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lutio fit: tertium
materia lapidis:
Geber:
phus:
Dues et natura nō faciunt frusta:
RIOVRABETI

The Islamic Golden Age

After the fall of the Roman Empire, Islam began to flourish, and brought about a new wave of advancements in medicine, philosophy, alchemy and more...

Written by Poppy-Jay Palmer

From the 8th to the 14th century, Islam flourished. The growth of the religion spurred on a period of cultural, economic and scientific advancement like no other. Following the death of Muhammad, the caliphs – the new Arab leaders – built and established a new city, Baghdad, as the heart of the Abbasid Caliphate. Conveniently located between Europe and Asia, Baghdad was an integral area for trade and the exchange of ideas. Over time it transformed into a hub of learning and commerce and, for a while, it became an unrivalled centre of science, medicine, education and philosophy. The period welcomed in what is now referred to as the Islamic Golden Age.

Knowledge was regularly shared at the famous House of Wisdom, or the Grand Library of Baghdad, where scholars from far and wide and with different cultural backgrounds gathered to translate all of the world's classical knowledge into the Arabic language. As insight into topics like art and culture, healthcare, law, theology, engineering and natural sciences expanded, so did the understanding of alchemy.

After the fall of the Western Roman Empire, the study of alchemical development moved to the Caliphate and the Islamic civilisation, which became one of the world's leading cultures when it came to both traditional alchemy and early practical chemistry. Even the word alchemy was originally derived from the Arabic word al-kīmiyā. Some historians also believe that it came from the Egyptian word kemi, meaning black. Much more is known about ancient Islamic alchemy that that of other cultures owing to the fact that Islamic alchemy was far better documented, with most of the earlier writings that have been passed

During the Islamic Golden Age, the city of Baghdad became a hub of learning and commerce, and changed Middle Eastern culture forever

Images source: Getty

Islamic scholars translated as much classical knowledge from Latin to Arabic as possible, meaning historians have been able to learn from the records

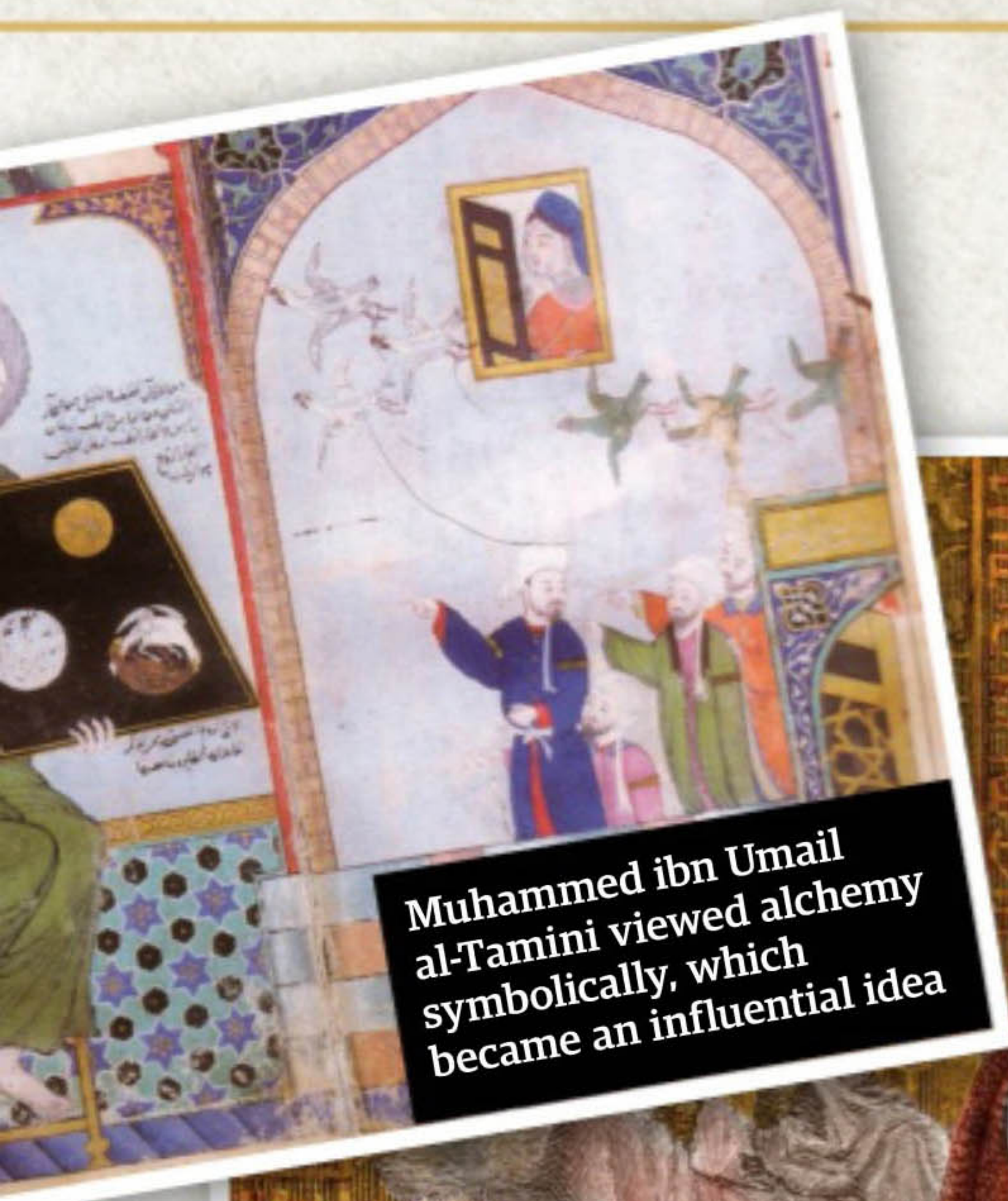
down through the years being preserved as Arabic translations of the originals.

Ancient Islamic chemistry – or Arabic chemistry, as it is also often called – covers a whole matter of topics. The late AI Sabra, a professor of the history of science who specialised in the history of optics and science in medieval Islam, narrowed down the definition. In his article *Situating Arabic Science: Location versus Essence*, he described Arabic (or Islamic) science as a term describing the scientific research and activities of people who lived in a region that roughly extended chronologically from the eighth century AD to the beginning of the modern era, and geographically from the Iberian Peninsula and North Africa to the Indus Valley and from southern Arabia to the Caspian Sea, or the region covered by what has been described as Islamic civilisation for most of that period. The research and findings of Islamic chemistry were mostly expressed in the Arabic language. Ancient Islamic alchemy, on the other hand, refers to a very particular subset of Islamic chemistry: the search for metallic transmutation.

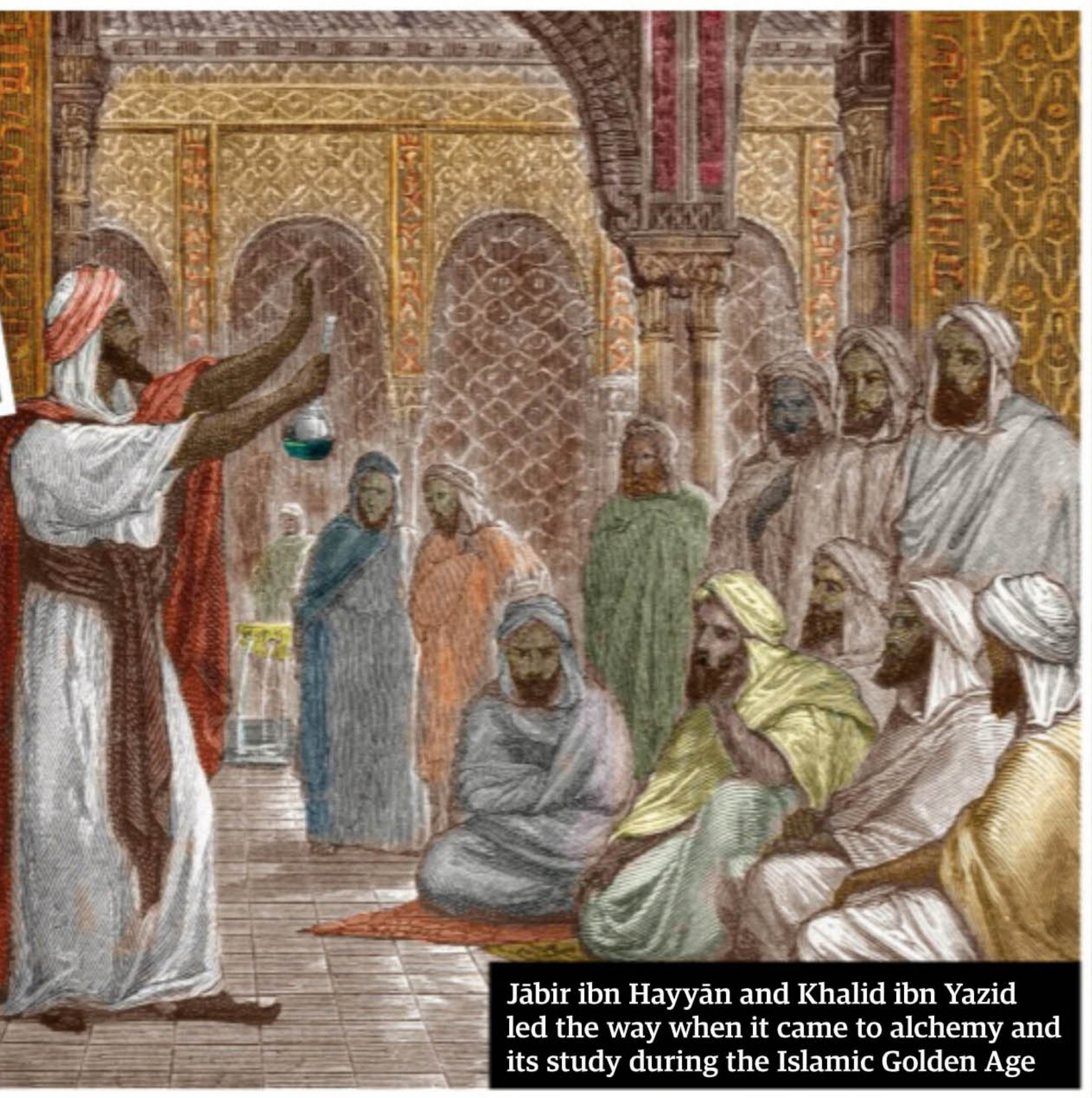
Though different cultures had different approaches when it came to the sciences during the Middle Ages, there was often overlap between that of the Arabic areas and that of the Western hemisphere. Cultural, religious and scientific diffusion of information between the Eastern and Western societies began with the conquests of Alexander the Great in the 3rd century BCE, with greater communication between the two being allowed. Thousands of years later, those Eastern territories that had been conquered, like Iran and Iraq, became the centre of religious movements, including Christianity, Manicheism and Zoroastrianism, all of which involve sacred texts as a basis and encouraged literacy and the spread of ideas, and the Qur'an, Islam's holy book, became an important source of theology, morality, law and cosmology. Following Muhammed's death, Islam spread throughout the Arabian Peninsula, Persia, Syria, Egypt, Israel and Byzantium by way of military conquest. With it went a keenness for knowledge and scholarship, and the concept of sciences like alchemy. Islamic alchemy was studied as a subset of science, but it still held onto the mystical and religious aspects that set Eastern alchemy apart from the brand that was studied in the Western hemisphere, which predominantly held Christian ideals. Just as the work of the likes of the so-called Hermes Trismegistus is studied today in order to better understand the workings of ancient Western alchemy, Islamic alchemy has many rockstars of its own. Jābir ibn Hayyān, one of the most famous Islamic alchemists, covered a vast range of topics – including cosmology, philosophy, astrology and more – in his written works known as the *Jabirian Corpus*. Khalid ibn Yazid, also known as King Calid, was the author of the first alchemical work translated from Arabic to Latin.

Perhaps not as well known as Jābir or King Calid but just as notable was Dhūl-Nūn al-Misri, an early Egyptian mystic and ascetic who studied alchemy, medicine and Greek philosophy in his early life. Both during his lifetime and after, Dhūl-Nūn's work and legendary wisdom have caused him to be celebrated by Islamic thinkers and considered one of the greatest saints of the early era of Sufism. As a legendary thaumaturge, he was supposed to have known the secret of the Egyptian hieroglyphs. None of his written works have survived the centuries but his sayings and poems, both rich in mystical imagery, endured in the oral

Rhazes is well-known for discovering numerous compounds and chemicals, including alcohol and sulphuric acid, through his work in alchemy and chemistry



Muhammed ibn Umail al-Tamini viewed alchemy symbolically, which became an influential idea



Jābir ibn Hayyān and Khalid ibn Yazid led the way when it came to alchemy and its study during the Islamic Golden Age

tradition and brought him even more fame and appreciation over the years. Although much of Dhūl-Nūn's legacy revolves around the mystical side of him, he was also a well known Hermetic alchemist and is often associated with Jābir ibn Hayyān. Another influential Islamic alchemist was Muhammad ibn Zakariya al-Razi, also known by his Latinised name Rhazes. He was also a polymath, physician, philosopher and an important figure in the history of medicine. Through his work, Rhazes made a number of fundamental contributions to a number of different fields: he wrote a pioneering book on smallpox and measles and their characteristics, carried out integral work on the understanding of ophthalmology, or the diagnosis and treatment of eye disorders, and was even the first person to recognise the reaction of the pupil to light. Through translation, this medical work was passed around European practitioners and profoundly influenced medical education in the West, with some of his books making it to the medical curriculum in Western universities.

However, it was his work with compounds and chemicals that caught the attention of alchemists all over the world, and many of the chemical instruments he developed are still used today. Within alchemic and chemistry circles, Rhazes is well-known for discovering numerous previously undiscovered compounds and chemicals, including alcohol, which he obtained through perfecting methods of distillation, and sulphuric acid. He also strongly believed in the possibility of transmutation of lesser metals into silver and gold, a theory that was attested after his death by Arab scholar Abū al-Faraj Muhammad ibn Ishāq al-Nadīm's chapter on alchemy in his book *Kitāb al-Fihrist*. Rhazes was so renowned in the field that some of his contemporaries even believed that the alchemist had obtained the secret of transforming iron and copper into gold. His studies can be better understood through reading his many texts on alchemy, most of which are written in Persian.

The work of 10th century alchemist Muhammed ibn Umail al-Tamini gives insight into a different side of alchemy that was alive and well during the Islamic Golden Age. Very little is known about his life, as he famously lived in seclusion, but his writings suggest that he was born in Spain to Arabic parents before living and working in Egypt.

As a mystical and symbolic alchemist, he was known for rejecting alchemists who took their subject too literally. Where some of his peers studied the sciences of metallurgy and chemistry, Muhammed ibn Umail al-Tamini preferred to focus on the symbolic meaning of alchemy, which he believed was tragically overlooked. In his work *Book of the Explanation of the Symbols*, he emphasised that the sages spoke in symbols and explained the study of alchemy as an allegory for something more complex. Though Muhammed ibn Umail al-Tamini was devoted to Greek alchemy, he wrote as a Muslim and frequently mentioned his religion in his work and even quotes verses from the Quran. As well as studying the symbols of alchemy, Muhammed ibn Umail al-Tamini also presented himself as an interpreter, and set his treatise *Silvery Water* in the Egyptian temple known as the Prison of Yasuf, where the Jewish, Christian and Muslim figure Joseph famously interpreted the dreams of the Pharaoh.

Age of gold

'Golden Age' might seem like quite a grand way of describing Islamic culture at the time of the Middle Ages, but it's also rather fitting. The term sits in contrasts to the European Dark Ages, the historical period that occurred in the Western world shortly after the fall of the Roman Empire and saw a huge demographic, cultural and economic decline.

The term 'Islamic Golden Age' first started being used in 19th century literature about Islamic history in the context of Orientalism, the western aesthetic fashion of imitating or depicting aspects of the Eastern world. The term was notably used by the author of *A Handbook for Travellers in Syria and Palestine*, published in 1868, which said that Damascus' most beautiful mosques were "like Mohammedanism itself, rapidly decaying," and relics of "the golden age of Islam."

As well as describing the culture of the time, "Islamic Golden Age" was also used to comment on military achievement. The timespan differs depending on the context. Some historians extend the Golden Age to the duration of the Caliphate, while others have it end after a few decades of Rashidun conquests with the death of Umar and the First Fitna. Since the second half of the 20th century, the term has mostly been used to describe the cultural side of things.

The term 'Islamic Golden Age' was first used in the context of the western aesthetic fashion known as Orientalism

Images source: Getty, Wiki

The legend of Calid

Whether historical prince or a timeless legend, Calid is renowned as the catalyst behind the first Arabic translations of alchemical texts

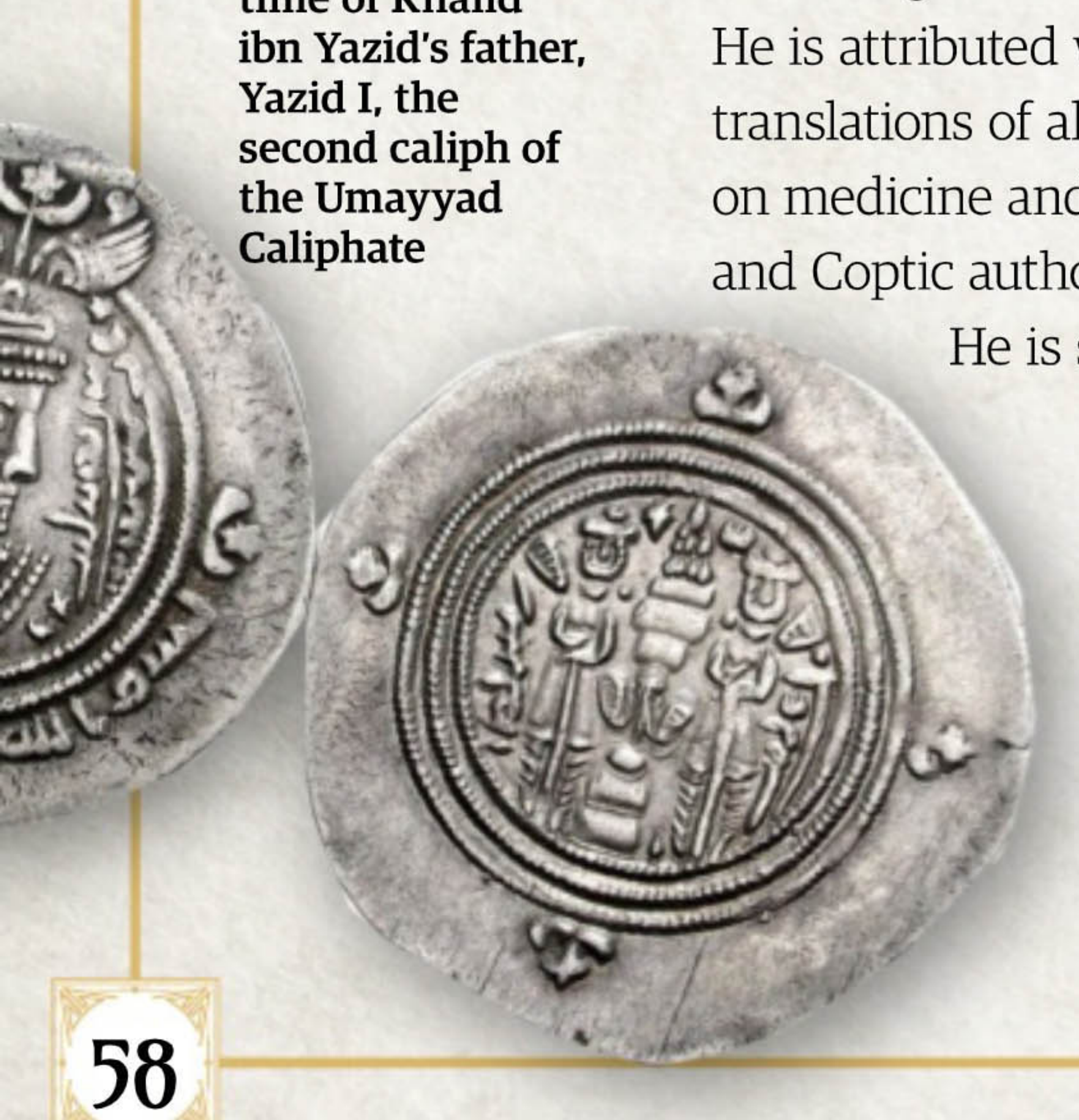
Written by Dee Dee Chainey

Calid was a legendary figure, believed to have become one of Arabia's earliest alchemists. He has been identified as the Umayyad prince Khalid ibn Yazid, thought to have lived from 660–704 CE. He was the brother of the third Umayyad caliph, who died before his younger sibling came of age. While he was a candidate to inherit the throne, this was not to be, and he instead travelled to Egypt to study the esoteric arts.

Many credit Calid with bringing alchemical knowledge from Alexandria to the Islamic world. He is attributed with championing the first Arabic translations of alchemical texts, along with others on medicine and astronomy written by Greek and Coptic authors. His story is steeped in legend. He is said to have made long journeys to exotic lands in search of Morienus, a monk who taught the secrets of alchemy. Yet some tales instead relate how Greek scholars were summoned by the prince, of which we might assume the monk was one. There is some debate whether the monk was Egyptian or Syrian, though he is said to have supported the Byzantine emperors and belonged to the Melkite Church.

Legend tells that Morienus taught Calid the secret of the Philosopher's Stone. Some scholars suggest this is merely propaganda issued against the prince for not pursuing the throne with more fervour. Accounts recall that Khalid ibn Yazid was too preoccupied with an 'impossible pursuit' to care about kingship, and the blame later fell at the feet of alchemy. A manuscript entitled *Liber de compositione alchimiae* documents correspondence between the two legendary men, but its authenticity has been questioned as it has been dated to the 17th or 18th century.

Critics of alchemy, such as Ibn Khaldūn, question the authenticity of Calid's works, stating that such arts were unknown during his time. Others argue there is no proof that Calid had nothing to do with alchemy. The truth remains a mystery.



A coin from the time of Khalid ibn Yazid's father, Yazid I, the second caliph of the Umayyad Caliphate

Image source: SPL; WIKI Commons By Classical Numismatic Group.

The *Kitāb al-bayān wa al-tabyīn* tells that Khalid ibn Yazid was eloquent, an excellent judge and a man possessed of great oratory skills

The Emerald Tablet

A hidden formula to create gold? A key to enlightenment? What are the secrets of one of alchemy's most important texts?

Written by Paul Walker-Emig

The Emerald Tablet is a cryptic, much-studied and repeatedly reinterpreted passage of writing that alchemists have pondered over for centuries in an attempt to unlock its secrets. It was commonly believed by European alchemists up until the 15th century that the text was a code describing laboratory processes, a secret recipe that might lead them to the Philosopher's Stone – the ability to turn common metals into gold. Conversely, 16th-century alchemists tended to interpret the text spiritually, believing it to point towards a way to summon angels and commune with God.

The text is attributed to the *Hermetica*, a series of Egyptian-Greek texts from the 2nd century onwards that European alchemists considered the foundation of their practice. It was translated multiple times into multiple languages, appearing in Arabic, Latin and English.

Isaac Newton's translation of The Emerald Tablet reads as follows:

"Tis true without lying, certain and most true.

That which is below is like that which is above
and that which is above is like that which is
below
to do the miracles of one only thing

And as all things have been and arose from
one by the mediation of one:
so all things have their birth from this one
thing by adaptation.

The Sun is its father,
the moon its mother,
the wind hath carried it in its belly,
the earth is its nurse.
The father of all perfection in the whole world

This 15th-century work of art depicts the discovery of the legendary Emerald Tablet, over which alchemists obsessed for centuries

is here.
Its force or power is entire if it be converted
into earth.
Separate thou the earth from the fire,
the subtle from the gross
sweetly with great industry.
It ascends from the earth to the heaven
and again it descends to the earth
and receives the force of things superior
and inferior.

By this means you shall have the glory of the whole
world and thereby all obscurity shall fly from you.

Its force is above all force,
for it vanquishes every subtle thing and penetrates
every solid thing.

So was the world created.
From this are and do come admirable
adaptations
where of the means is here in this.

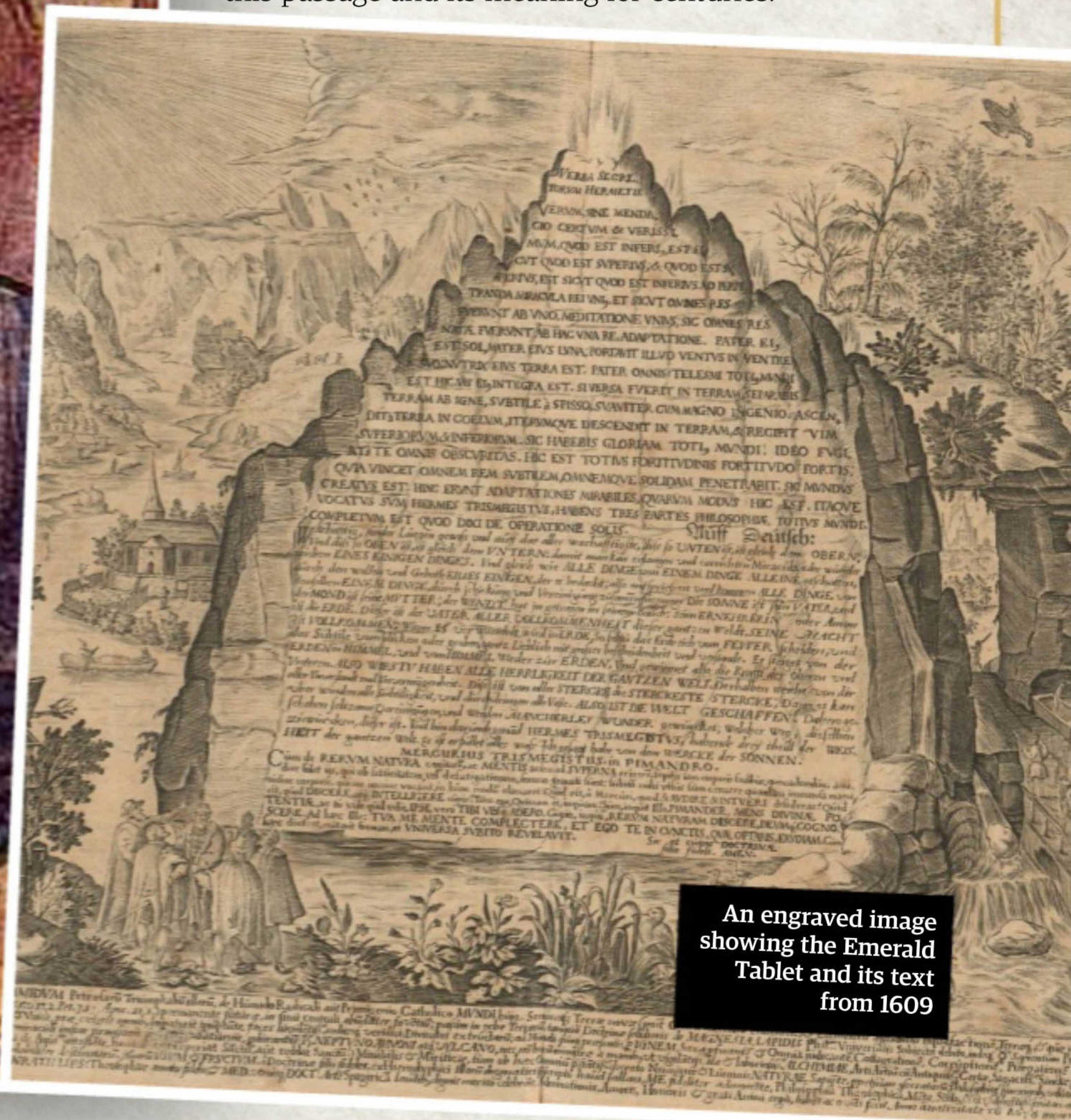
Hence I am called Hermes Trismegist,
having the three parts of the
philosophy of the whole world

That which I have said of
the operation of the Sun is
accomplished and ended."

Other names for the Emerald Tablet include the Smaragdine Tablet and the Tabula Smaragdina

With references to the principle of unity, the four elements and the three principles, its importance to alchemy is clear, as is its rich metaphorical and allegorical texture – it's no wonder alchemists have been able to meditate on this passage and its meaning for centuries.

Images source: Wiki



An engraved image showing the Emerald Tablet and its text from 1609

Jabir ibn Hayyan: The founder of chemistry

Emerging during the dawn of the Islamic Golden Age, Jabir ibn Hayyan single-handedly pulled alchemy from its cloak of mysticism and transmuted it into a science

Written by Hareth Al Bustani

Jabir ibn Hayyan was born in 721 CE in Khorasan, straddling Iran and Central Asia, towards the northeastern frontier of the Islamic world. Under the leadership of the Umayyad dynasty, the Muslim empire had recently reached its remarkable peak, stretching all the way from Spain to China, via North Africa – all managed by a staggeringly efficient bureaucracy, inherited from the Sassanids and Byzantines. Trouble, however, was brewing.

As discontent spread amongst non-Arabs, a subgroup of Mohammed's Hashemite clan, known as the Abbasids, emerged in Khorasan, rustling up support for their own dynasty. Among their early supporters was Jabir's father, Hayyan, a Yemeni druggist who left his home in Kufa, Iraq, to stoke the flames of revolution. When the Umayyads caught wind of the emerging coup, Hayyan was captured and executed, forcing his family to flee to their homeland of Yemen. There, on the periphery, a young and curious Jabir buried himself in the Quran and mathematics, studying under the scholar Harbi Al Himyari.

In 750, the Abbasids finally overthrew the government, replacing the caliph with one of their own. They established a new capital near the old Sassanid heartland of Ctesiphon, the round city Madinat Al Salam – the City of Peace, later known as Baghdad. Jabir moved to his father's home in Kufa, and sought out the renowned Jafar Al Sadiq – a scholar and scientist, revered by the Twelver Shias as the Sixth Imam. Now around 30 years old, Jabir hurled himself into the worlds of alchemy, philosophy, pharmacy and astronomy. To accelerate his intellectual growth, he learned Greek, familiarising himself with the works of Plato, Socrates, Aristotle, Pythagoras and Democritus, as well as the mystical ideas of Apollonius of Tyana.

His mentor encouraged him to pay particular attention to the composition of substances derived from minerals, plants and animals. Jabir was fascinated by the writings of Khalid ibn Yazid, the son of a 7th century caliph, who speculated about turning base metals into gold. In this exciting new era, Jabir's enthusiasm came to embody the spirit of the times.

As the Abbasids cemented their foothold over the Caliphate, they inherited a realm twice the size of the Roman Empire, engulfing the intellectual heritage of the world's greatest academic centres. From the Greek libraries of the Near East to the Persian academy of Jundishapur, and the metallurgists of Egypt to the doctors of Damascus, it was a land overflowing with philosophical, scientific and mathematical treasures, just waiting to bear fruit. The rise of the Abbasids coincided with that of the Barmakids – a family from eastern Afghanistan whose support had been instrumental in the revolution. For his trouble, Khalid ibn Barmak was appointed tutor to the caliph's young son, Harun Al Rashid – a milk brother to his own child, Yahya.

Yahya himself grew into one of the most influential figures in the Islamic world, serving as chief secretary and counsellor, with control over the caliph's official seal. His sons were appointed viziers, or grand ministers. He patronised learning on a scale the Muslim world had never known before – translating countless texts into Arabic, importing the world's finest physicians and commissioning epic poems. When Harun Al Rashid was appointed caliph, he, too, encouraged his subjects to embrace knowledge, literature and academics. By now, Jabir had established himself as the leading light among a generation of luminaries. Although he steeped himself in the exciting allure of Sufi mysticism, he sought to lift the art of alchemy from the realm of esoteric conjecture into something more tangible and real.

He built his research upon a foundation of Aristotle's four elements – earth, water, air and

Jabir produced a prodigious body of work, exploring alchemy on both a metaphysical and methodological level, his genius matched only by his passion

Images source: AGetty

fire – whose properties were hot or cold, and dry or wet. He divided the natural elements into three categories; spirits, which vaporise on heating, metals and stones – which can be converted to powder. Jabir also developed the 'mercury-sulphur' theory, which claimed that all metals derived their properties from their relative composition of 'mercury' and 'sulphur' – two hypothetical elements, relating to their metallic nature, and combustibility. Sulphurs, he speculated, derived their properties from "variation in the soils and in their positions with respect to the heat of the Sun".

When mercury and sulphur were combined to create a compound, he argued that each element remained unchanged in its "permanent natural form". "All that has happened is that their parts have become attenuated and in close approximation to one another, so that to the eye the product appears uniform," he wrote. However, by achieving the right balance of sulphur and mercury, he believed one could transmute a metal into the perfect compound – gold.

While philosophy and medicine were well respected among the nobility, alchemy had arrived under a cloak of superstition and magic. It was stigmatised as the trade of charlatans, even if Ali ibn Abi Talib himself had supposedly called alchemy "the sister of prophecy". Jabir validated his theoretical ideas with practical experiments, setting up a laboratory and studying the properties of various substances. Although much of his work remained dressed in the traditional language of mysticism, he established a scientific method – single-handedly transforming alchemy into chemistry. "Scientists," he said, "delight not in abundance of material; they rejoice only in the excellence of their experimental methods."

Chemistry, he defined as "a branch of natural science", one that "investigates mines and the manner in which, by the action of fire, metals are produced in them, since men desire by artificial means to imitate nature". He continued: "How can a man imitate a thing of which he knows nothing?" Through his experiments, he discovered an array of chemical operations, including calcination, crystallisation, sublimation, liquefaction, synthesis of acids, evaporation, oxidation, purification, amalgamation and filtration.

> "How can a man imitate a thing of which he knows nothing?"

To facilitate the scope of his scientific ambitions, he invented his own apparatus, such as the retort, used to distil liquids. Along the way, he progressed methods of preparing various metals, dying cloth, tanning leather, developing steel, varnishing waterproof cloth, rust-prevention, the use of manganese dioxide in glass-making and identifying paints and greases. He was the first person to produce both crude sulfuric and nitrate acid, mixing the two to produce aqua regia – which he used to dissolve gold and silver.

As a man with a broad understanding of philosophy, medicine, mysticism and alchemy, he was impossible to dismiss. However, his prolific exploration of the dark arts placed Jabir in great danger. Subjected to persecution "from the hands of envious and evilly disposed people", he narrowly escaped death on many occasions, according to Al Jildaki. By the same token, his brilliance earned him the attention of the Barmakids and, after curing one of

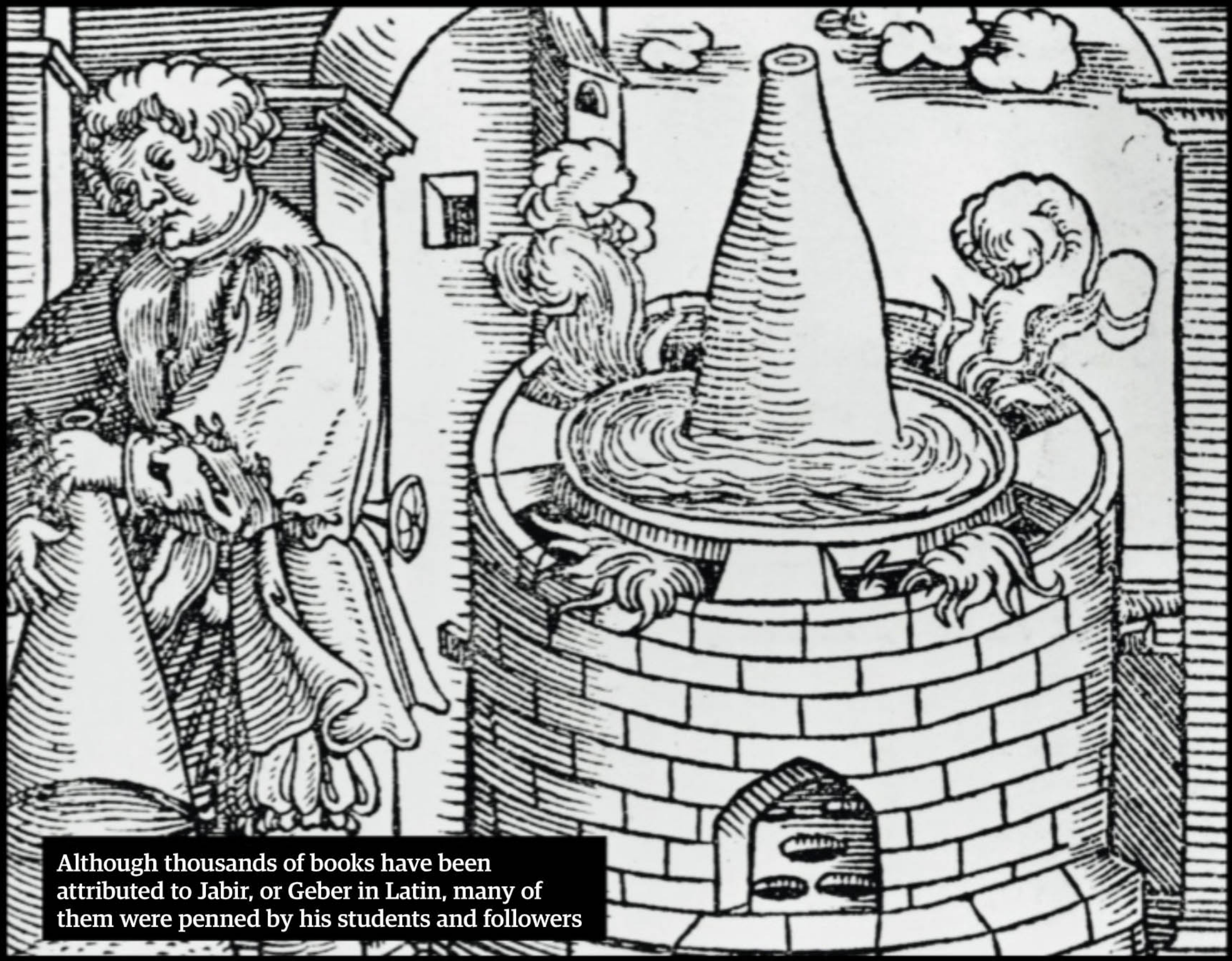
Corpus Jabirianum and the Pseudo-Geber

A prodigious body of work has been attributed to Jabir, whose name adorns thousands of books, covering everything from alchemy to philosophy, and music to magic. Much of the 'corpus Jabirianum' was believed to have been penned by his students and initiates, in the two centuries following his death.

Several of his works were cited in the *Fihrist*, a 10th century-bookseller's attempt to index the entire bibliography of Arabic works to date. The author, Ibn Al Nadim, professed that while some scholars suggested the alchemist never existed at all, he believed that "the man is authentic", adding: "The books composed about this subject are more numerous and greater than can be estimated, because the authors make false claims about them…It is Allah who knows."

In 1144, Jabir's *Book of the Composition of Alchemy* was translated into Latin, sparking off a European obsession. Although scores of books were attributed simply to 'Al Sufi' in the Middle Ages, when Richard Russell translated the *Sun of Perfection* in 1678, he referred to him as 'Geber, the most famous Arabian Prince and Philosopher'.

While Jabir's works demonstrated an unparalleled level of experimentation and comprehension, his *Book of Stones* was written in deeply esoteric code, decipherable only to the initiates of his alchemy school. The seemingly nonsensical writings went on to inspire the term 'gibberish'.



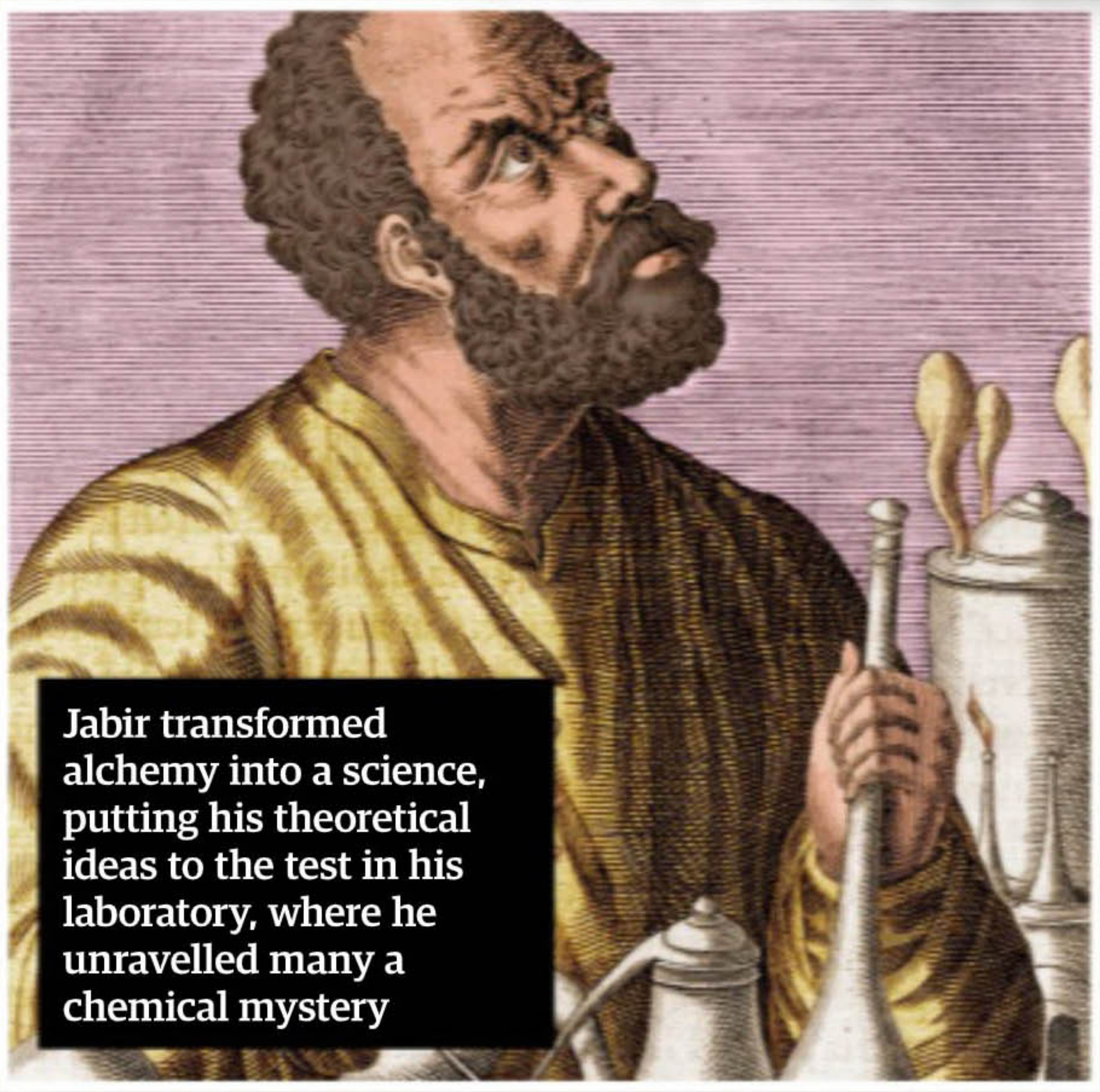
Although thousands of books have been attributed to Jabir, or Geber in Latin, many of them were penned by his students and followers

Yahya's valuable slaves with an elixir of his own invention, their trust. With their patronage, he was able not only to pursue his passions in the open, but rise to the position of court alchemist, even serving as a physician to Yahya's sons. Suddenly, as the Islamic world developed its own academic traditions, Arabic became the language of science – 'al-kīmiyā' would later become 'alchemy', and then 'chemistry'.

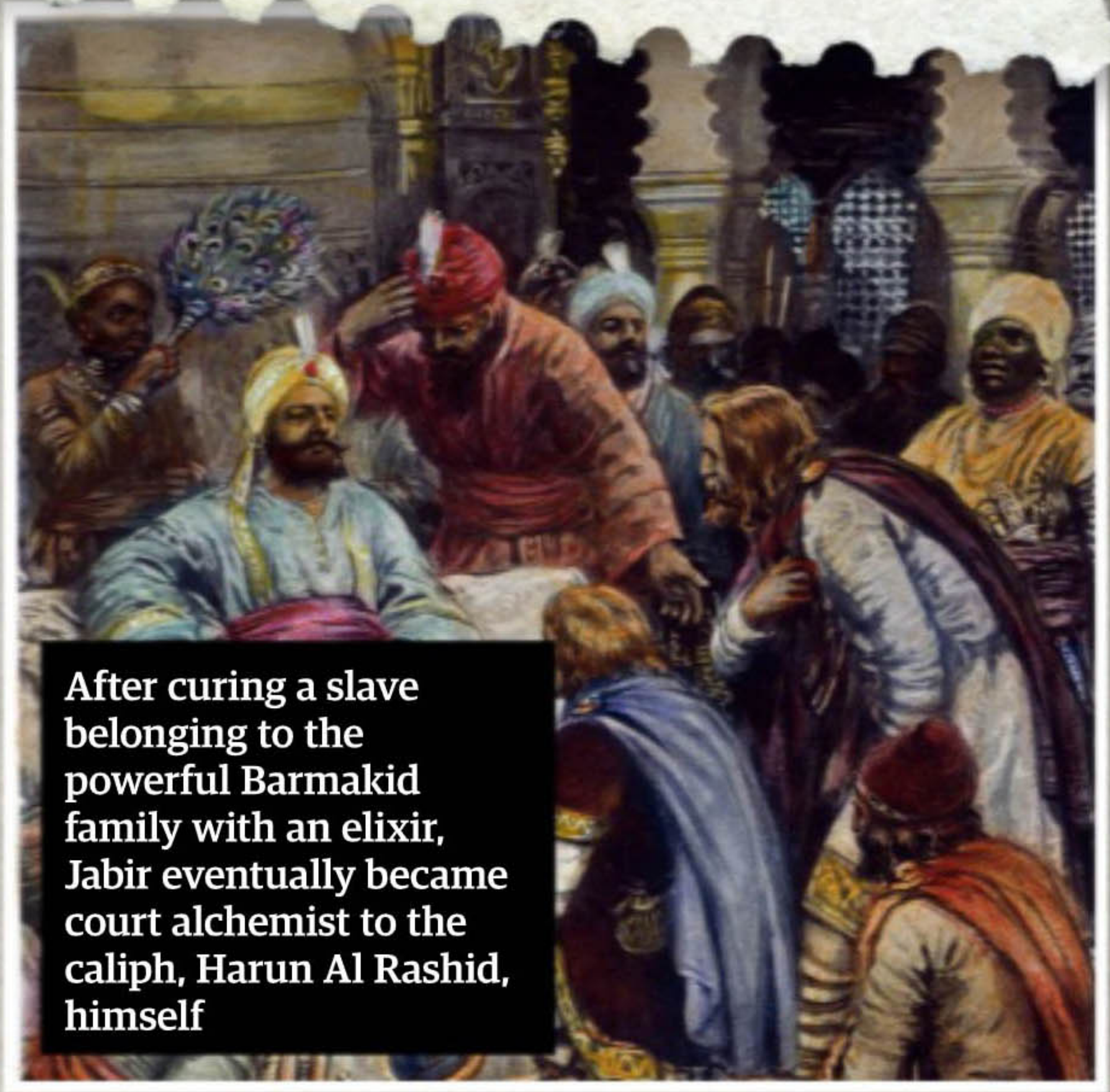
Among Jabir's most spectacular theories was the Theory of Balances, a divine science devoted to understanding every object and process in the universe. Continuing this, the Balance of Letters comprised a metaphysical and methodological system, relating the four natures – heat, coldness, humidity and dryness – to phonetics, morphology, prosody and musical harmony.

Unfortunately, in 803, with tentacles now stretching across the Caliphate, the Barmakids fell out of favour with Harun Al Rashid – perhaps having grown too influential for their own good. The caliph spontaneously stripped the dynasty of its positions and wealth, locked up Yahya and executed his son Jafar. With his fate inextricably linked to that of his patrons, Jabir fled back to his father's home in Kufa, where he spent the rest of his days conducting experiments in his home laboratory, before dying in 815 – supposedly at the ripe old age of 95. Jabir's work would go on to play a crucial role in European chemistry of the Middle Ages. Several of his books were translated into Latin, remaining popular for hundreds of years. Two centuries after his death, during the demolition of Baghdad's Bab Al Sham quarter, a mortar was discovered in his laboratory, containing 200 pounds of gold. With thousands of books attributed to his name, his practical and philosophical influence is unparalleled. It is a fitting legacy for a man who wrote: "The first essential in chemistry is that thou shouldst perform practical work and conduct experiments. For he who performs not practical work nor makes experiments will never attain to the least degree of mastery. But thou, O my son, do thou experiment so that thou mayst acquire knowledge."

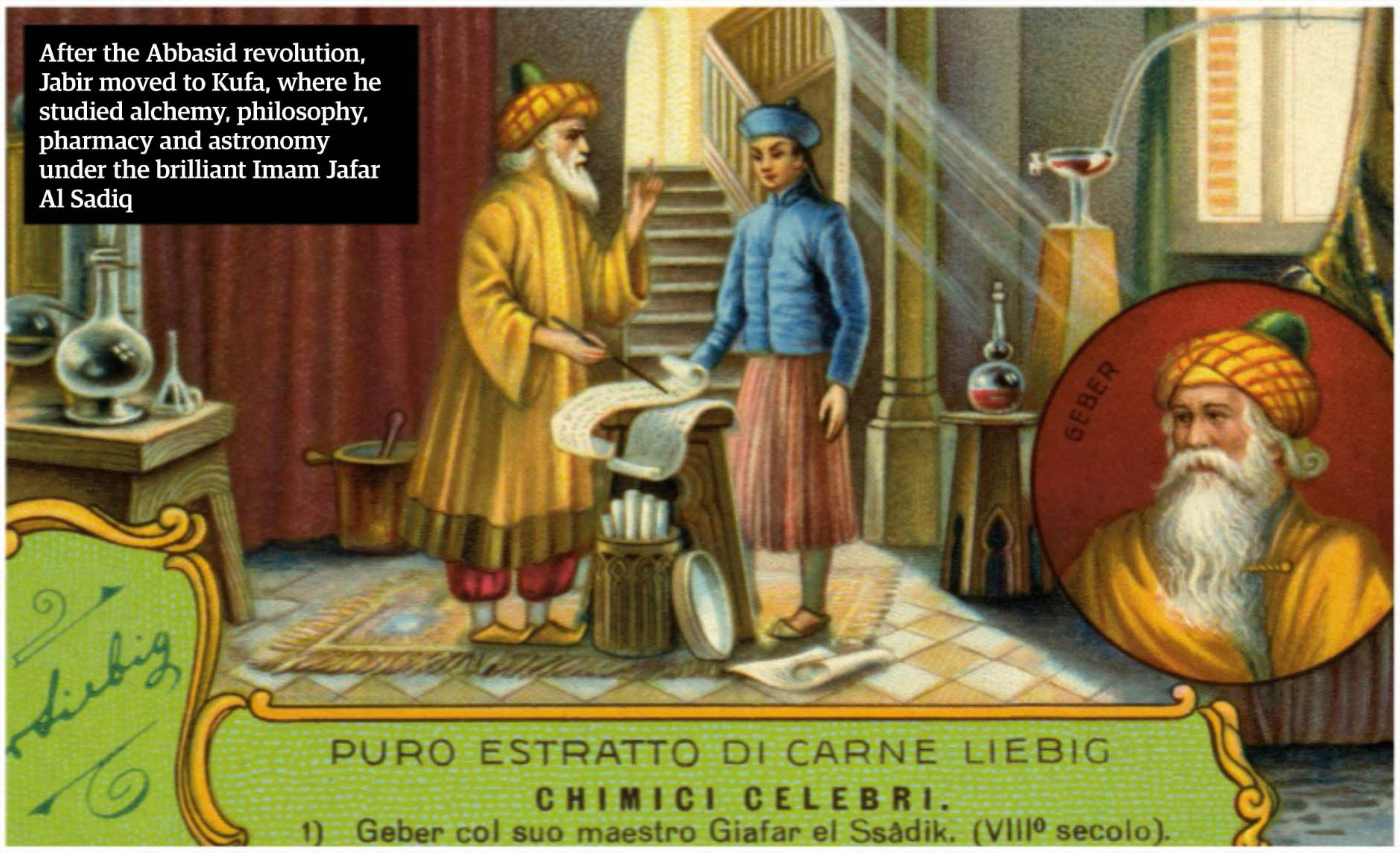
Jabir spent much of his life travelling from place to place, spreading his knowledge – hence his place on Syrian stamps



Jabir transformed alchemy into a science, putting his theoretical ideas to the test in his laboratory, where he unravelled many a chemical mystery



After curing a slave belonging to the powerful Barmakid family with an elixir, Jabir eventually became court alchemist to the caliph, Harun Al Rashid, himself


GEBER
Liebig
PURO ESTRATTO DI CARNE LIEBIG
CHIMICI CELEBRI.
1) Geber col suo maestro Giafar el Ssâdik. (VIII° secolo).

After the Abbasid revolution, Jabir moved to Kufa, where he studied alchemy, philosophy, pharmacy and astronomy under the brilliant Imam Jafar Al Sadiq

Images source: Alamy, Getty

Takwin and Islam

In pursuit of creating artificial life many Medieval Arabic and Islamic alchemists looked to takwin, but none as enthusiastically as Jabir ibn Hayyan…

Written by Poppy-Jay Palmer

In ancient times, alchemical goals differed depending on where in the world the alchemist was. A popular area of intrigue for Medieval Arabic and Islamic practitioners was the quest to create artificial life, with the act being known as takwin. Takwin expresses the metaphysical and material process of the generation of life, and though the practice may conjure up images of Dr Frankenstein creating his famed monster, the goal of takwin was to simply create life.

A lot of insight into takwin can be taken from the work of semi-legendary 8th-century Arabic alchemist Jabir ibn Hayyan, who strove to create life and conducted numerous investigations that saw him experiment with the practice. His *Book of Assemblage* included recipes for creating scorpions, snakes and even humans. However, it is still unknown whether Jabir intended for his endeavours surrounding takwin to be taken literally. In the *Book Of Stones* he wrote, "The purpose is to baffle everyone except those whom God loves and provides for." Many other Arabic alchemists practised takwin during the Medieval period, but none came close to matching Jabir's level of fame.

Though Jabir published his works to spread his alchemical knowledge, they weren't exactly accessible; they seem to have been deliberately written in a particularly complicated code so that only those who had been initiated into his school could understand them. As a result, modern students of takwin have found it difficult to decipher which parts of Jabir's work should be read as ambiguous symbols and which parts should be taken more literally. His works were so nonsensical that the term 'gibberish' is believed to have been coined in reference to his writings.

Takwin is often thought of as a somewhat religious branch of alchemy, as the act was seen as an emulation of the divine creative and life-giving powers of Genesis and Resurrection and, from some alchemists' perspectives, tapped into the physical and spiritual forces in nature. It was believed to have been an act that inwardly purified and transformed the alchemists that performed it, prompting a spiritual regeneration, thereby making it a religious process. However, others believed that takwin only highlighted the strained relationship between Islamic magic and science with Islamic revelation and tradition.

The word 'alchemy' is derived from the Arabic word 'al-kīmiyā', which in turn may have come from the Egyptian 'kemi' ('black')

> "His works were so nonsensical that the term 'gibberish' is believed to have been coined in reference to his writings"

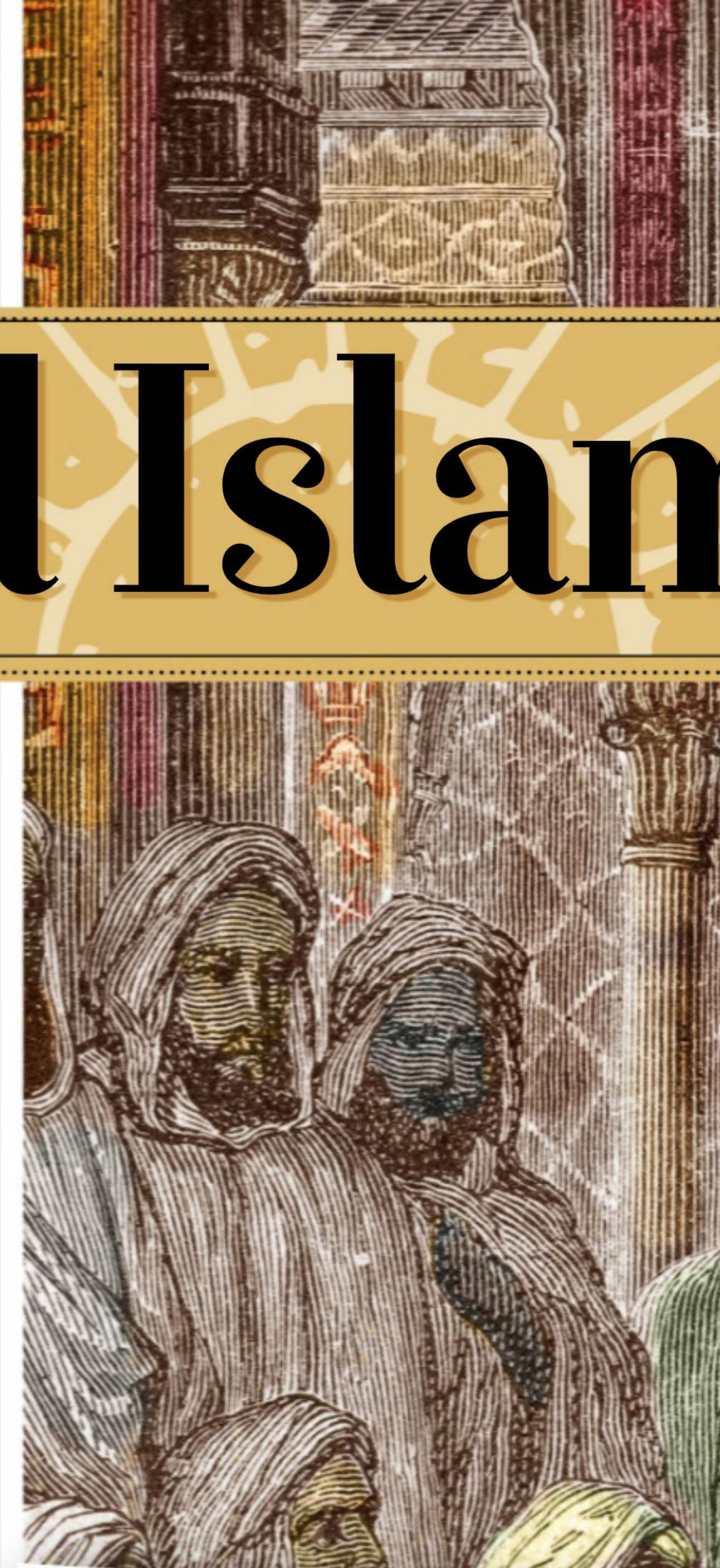


Image source: Getty, Alamy

nic alchemy

Famed Arabic alchemist Jabir ibn Hayyan centred many of his investigations around attempting to create life in a laboratory setting

Jabir ibn Hayyan addresses a class while teaching chemistry at the School of Edessa in Greece

Alchemy and elixirs

Forget the legendary elixir of life – Arabic alchemists have been using practical elixirs as remedies for centuries

Written by Poppy-Jay Palmer

Though alchemy has many different uses, it often goes hand-in-hand with medicine, especially in the case of Arabic alchemy. As practical knowledge of metal, stone and glass working advanced, so did peoples' knowledge of the science of pharmacology.

During Medieval times, the term 'al-kīmiyā' was used instead of the modern 'alchemy' in alchemical books and had a rather literal meaning; it was used to describe the substance through which base metals could be transmuted into noble ones. However, al-kimiya was also often used as a synonym for 'al-iksir', now 'elixir'. Though the meaning has changed as the study has transformed, in ancient times al-iksir was frequently used with a far more general meaning, being a "medium for obtaining something".

Medieval Islamic physicians regularly used natural substances as remedies. Plants were a popular source, and hemp and poppy were both increasingly useful when it came to elixirs. Previously unknown to pre-Islamic Arabia, hemp was introduced in the 9th century from India through Persia and Greek culture when botanist Dioscorides, who was revered by the Arabs, suggested that hemp could treat pain such as earaches. Before it was properly introduced to Islamic medicine, poppy was restricted to the therapeutic realm and users tended to overdose. However, it became a medicinal staple when Persian physician Yuhanna ibn Masawaih began prescribing it to relieve pain from gallbladder stones and eye-, head- and toothaches, for indigestion and inflammation of the lungs.

Natural remedies made using alchemical procedures aren't just a product of ancient times. Inspired by Medieval elixirs, many are still used today, created through procedures like fermentation, distillation and the extraction of

Elixirs have been used in alchemy for thousands of years, and the processes involved in creating them are still used for medical purposes

Images source: Getty, Wiki

> “Poppy was restricted and users tended to overdose”

mineral components from the ash of a plant. The result of these processes is known as spagyric, and the concept of spagyric remedy relies on three cardinal principles of alchemy: sulphur (the virtue of the plant, representing the volatile oil essence), salt (vegetable salts extracted from the calcined ashes of the plant) and mercury (the alcohol extract and life essence).

Though many elixirs are used by real people for practical purposes, others are merely legendary. The term ‘elixir’ is now often associated with the elixir of life, a potion that supposedly grants the drinker eternal life or youth and cures all known diseases. With the concept originating in Asia, specifically in either ancient India or China, alchemists from all kinds of cultures have sought out the means of creating it.

***Papaver somniferum*, more commonly known as poppy, was regularly used in Arabic medicine after physician Yuhanna ibn Masawaih began prescribing it**

The Philosopher's Stone

From formula for riches to miracle cures and everlasting life, we delve into the secrets of alchemy's holy grail

Written by Paul Walker-Emig

The Philosopher's Stone can be considered the ultimate goal of alchemy. Alchemists might not necessarily agree on what precisely the Philosopher's Stone *is*, but almost every alchemist coveted it in one way or another. In legend, some are even said to have acquired it – Albertus Magnus was said to have passed the secret formula for the Stone on to Thomas Aquinas before his death in 1280, for example.

The Stone, particularly in antiquity and the Middle Ages, was commonly understood to be some kind of primal matter from which everything else – including the four elements of fire, water, air and earth – was derived. Out of this idea came the theory that the Philosopher's Stone could be used to create new materials. More specifically, that it could be used to transform common metals into gold through a process called transmutation. 8th-century Islamic alchemists typically believed the Philosopher's Stone to be a dry red powder. This powder, they thought, was a vital ingredient for the process of transmutation.

Though a dominant interpretation of the Philosopher's Stone, this is far from the only one. Another popular conception of the Philosopher's Stone was that it was some kind of miracle elixir that could be used to heal diseases, extend life or even grant outright immortality.

One notable proponent of the theory was 16th-century alchemist Paracelsus, who suggested that the Philosopher's Stone could be diluted in wine to cure disease. 17th-century accounts claimed that Nicolas Flamel had gone a step further, achieving immortality through his discovery of the Stone. Historical records suggest he died in 1418, however.

Some even theorised that the Stone might be a part of the formula to, or refer to the secret of, creating life. A number of Muslim alchemists sought the goal of 'takwin', or the creation of artificial life. The aforementioned Paracelsus outlined a process for creating a 'homunculi', or a miniature human being, in his 1537 text titled *De natura rerum*.

Other alchemists suggest that the search for the Philosopher's Stone must turn inwards. In this tradition, writings about the Philosopher's Stone were always allegory, referring to some kind of spiritual, theological or psychological journey that aimed at unifying disparate elements to attain some kind of enlightenment or completeness.

Regardless of which interpretation of the Stone you examine, the idea of some lost, mystical knowledge or material that could provide the key to realising a material or spiritual miracle is unquestionably a compelling one. You can understand why its promise tantalised alchemists for so long. Had their quest been fruitful they would have reached the summit of alchemy.

Images source: Wiki, Thinkstock

This image from a 16th-century manuscript shows an alchemist holding a container representing the Philosopher's Stone, with the processes needed to create it represented within

Joseph Wright of Derby's 1771 painting depicts an alchemist who, in the process of trying to discover the Philosopher's Stone, has inadvertently discovered phosphorous

Image source: Wiki

Avicenna: The Persian philosopher

As one of the most influential philosophers in the history of Islam, Avicenna's theories led to the Arabic backlash against alchemy

Written by Dee Dee Chainey

Avicenna's full name in Arabic was in fact Abū Alī al-husayn ibn Abd Allāh ibn Sīnā, or for short, Ibn Sīnā. He was born around 980 CE in Afshana, near the capital of a Persian dynasty in Central Asia that is now in modern-day Uzbekistan. He was both a physician and philosopher during the Islamic Golden Age.

Avicenna was a dedicated scholar from an early age, studying weighty texts of earlier philosophers, and it's even said he had memorised the entire Quran by just ten years old. He is famous for considering medicine a much easier art than mathematics and metaphysics, yet he dedicated his life to philosophising about the latter, along with his role as a physician and vizier, including to Emir Nuh II. While some claim that he was the most influential physician since Hippocrates himself, Avicenna's work life was turbulent, and he fell foul of the emir. He spent much time dwelling on the nature of the human soul and its relationship with physical form, and he was a fierce critic of much of Aristotle's writings.

While Avicenna was a proponent of aromatherapy, many of his teachings attacked core elements of esoteric study. He was critical of astrology, believing that while planets could impact the Earth they could not be used to predict the future. He made a firm distinction between astrology and the science of astronomy, within which he developed his own theories surrounding the celestial bodies.

Avicenna fervently argued against the practice of transmutation, turning substances into something else – often base metals into gold. He dedicated four whole books to debunking this alchemical science: the first, entitled *Liber Aboali Abincine de Anima in arte Alchemiae*; the second, *Declaratio Lapis physici Avicennae filio sui Aboali*; the third, *Avicennae de congelatione et conglutinatione lapidum*; and the fourth, *Avicennae ad Hasan Regem epistola de Re recta*. There is some controversy surrounding these works, however. It is believed the first is a fake, while the second is by a different author.

The 13th century saw a debate arise as to the legitimacy of alchemy, which some claim was based on Avicenna's criticisms. Avicenna died in 1037 at just 58. His body was laid to rest in Hamadan, Iran, yet the controversy surrounding his ideas – and his reputation as one of the world's greatest minds – lives on.

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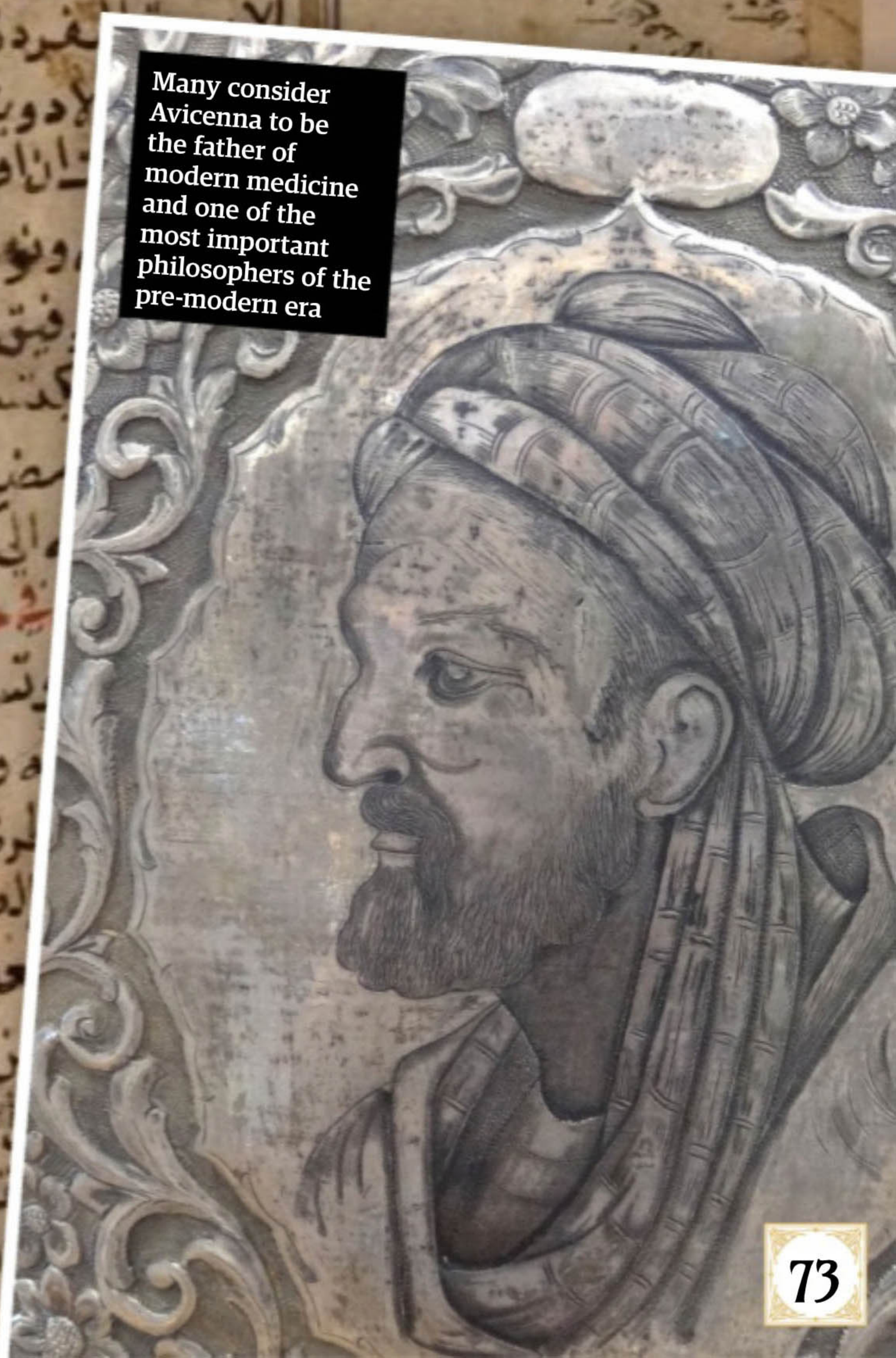
بسم الله الرحمن الرحيم وهو حسبي وثقتي عليه توكلت
الحمد لله حمدا يستحقه بعلو شانه وسبوغ احسانه وصلاته على نبيه محمد واله واصحابه وبعد فقد التمس مني
بعض خلص اخواني ومن يلزمني اسعافه بما يسمح به وسعي ان اصنف في الطب كتابا مشتملا على قوانينه الكلية والجزئية اشتمالا
يجمع الى الشرح الاختصار والى ايفاء الاكثر حقه من البيان الايجاز فاسعفته بذلك ورايت ان اتكلم اولا في الامور العامة الكلية
في كلا قسمي الطب اعني القسم النظري والقسم العملي ثم بعد ذلك اتكلم اولا في كليات احكام قوى الادوية المفردة ثم في جزئياتها
ثم بعد ذلك في الامراض الواقعة بعضو عضو فابتدي اولا بتشريح ذلك العضو ومنفعته واما تشريح الاعضاء المفردة البسيطة
فيكون قد سبق مني ذكره في الكتاب الاول الكلي وكذلك منافعها ثم اذا فرغت من تشريح ذلك العضو ابتدات في اكثر المواضع
بالدلالة على كيفية حفظ صحته ثم دللت بالقول المطلق على كليات امراضه واسبابها وطرق الاستدلالات عليها وطرق
معالجاتها بالقول الكلي ايضا فاذا فرغت من هذه الامور الكلية اقبلت على الامراض الجزئية ودللت اولا في اكثرها ايضا
على الحكم الكلي في حده واسبابه ودلايله ثم تخلصت الى الاحكام الجزئية ثم اعطيت القانون الكلي في المعالجة ثم نزلت الى
المعالجات الجزئية بدواء دواء بسيط او مركب وما كان سلف ذكره من الادوية المفردة ومنفعتها للامراض في كتاب
المفردة في الجداول والاصباغ التي اري استعمالها فيه كما تقف عليها المتعلم عليه اذا وصلت اليه لم اكرره الا قليلا منه
الادوية المركبة ايما الاحرى به ان يكون في القراباذين الذي اري ان اعمله اخرت ذكر منافعه ومضاره وكيفية
ان افرغ من هذا الكتاب الى كتاب يضاف الى الامور الجزئية مختص بذكر الامراض الذي اذا وقعت لا تختص بعضو
ونورد هنا ايضا الكلام في الزينة وان اسلك في هذا الكتاب ايضا مسلكي في الكتاب الجزئي الذي قبله
فيق الله الفراغ من هذا الكتاب جمعت بعد ذلك كتاب الاقراباذين وهذا الكتاب لا يسع من يدعي هذه
تكسب بها ان لا يكون جله معلوما محفوظا عنده فانه يشتمل على اقل ما لا بد منه للطبيب واما الزيادة
مضبوط وان اخر الله تعالى في الاجل وساعد القدر انتصبت لذلك انتصابا ثانيا واما الآن فاني اجمع هذا
الى كتب خمسة الفصل الاول من التعليم الاول من الفن الاول من الكتاب الاول من
في حد الطب اقول ان الطب علم يعرف منه احوال بدن الانسان من جهة ما يصح ويزول عنها لتحفظ
تسترد زايلة ولقايل ان يقول ان الطب ينقسم الى نظر وعمل وانتم قد جعلتم كله نظرا اذ قلتم انه علم
ونقول انه يقال ان من الصناعات ما هو نظري وعملي ومن الفلسفة ما هو نظري وعملي ويقال ان
ظري ومنه ما هو عملي ويكون المراد في كل قسمة بلفظ النظري والعملي شيا اخر ولا يحتاج الان الى بيان اختلاف
الطب فاذا قيل ان من الطب ما هو نظري ومنه ما هو عملي فلا يجب ان يظن ان مرادهم فيه هو ان احد قسمي
علم والقسم الاخر هو المباشرة للعمل كما يذهب اليه وهم كثير من الباحثين عن هذا الموضع بل يحق عليك
ذلك شي اخر هو انه ليس ولا واحد من قسمي الطب الا علما لكن احدهما علم اصول الطب والاخر علم كيفية
الاول منهما باسم العلم او باسم النظر ويخص الاخر باسم العمل فنعني بالنظر منه ما يكون التعليم فيه
من غير ان يتعرض لبيان كيفية عمل مثل ما يقال في الطب ان اصناف الحميات ثلاثة وان الامزجة تسعة
العمل بالفعل ولا مزاولة الحركات البدنية بل القسم من علم الطب الذي يفيد التعليم فيه رايا ذلك الراي
مثلا ما يقال في الطب ان الاورام الحارة يجب ان يقرب اليها في الابتدا ما يردع ويبرد

Avicenna was the author of one of the most celebrated medical textbooks, *The Canon of Medicine*, which was in use for centuries. This image shows a 16th-century version



Many consider Avicenna to be the father of modern medicine and one of the most important philosophers of the pre-modern era

European alchemia

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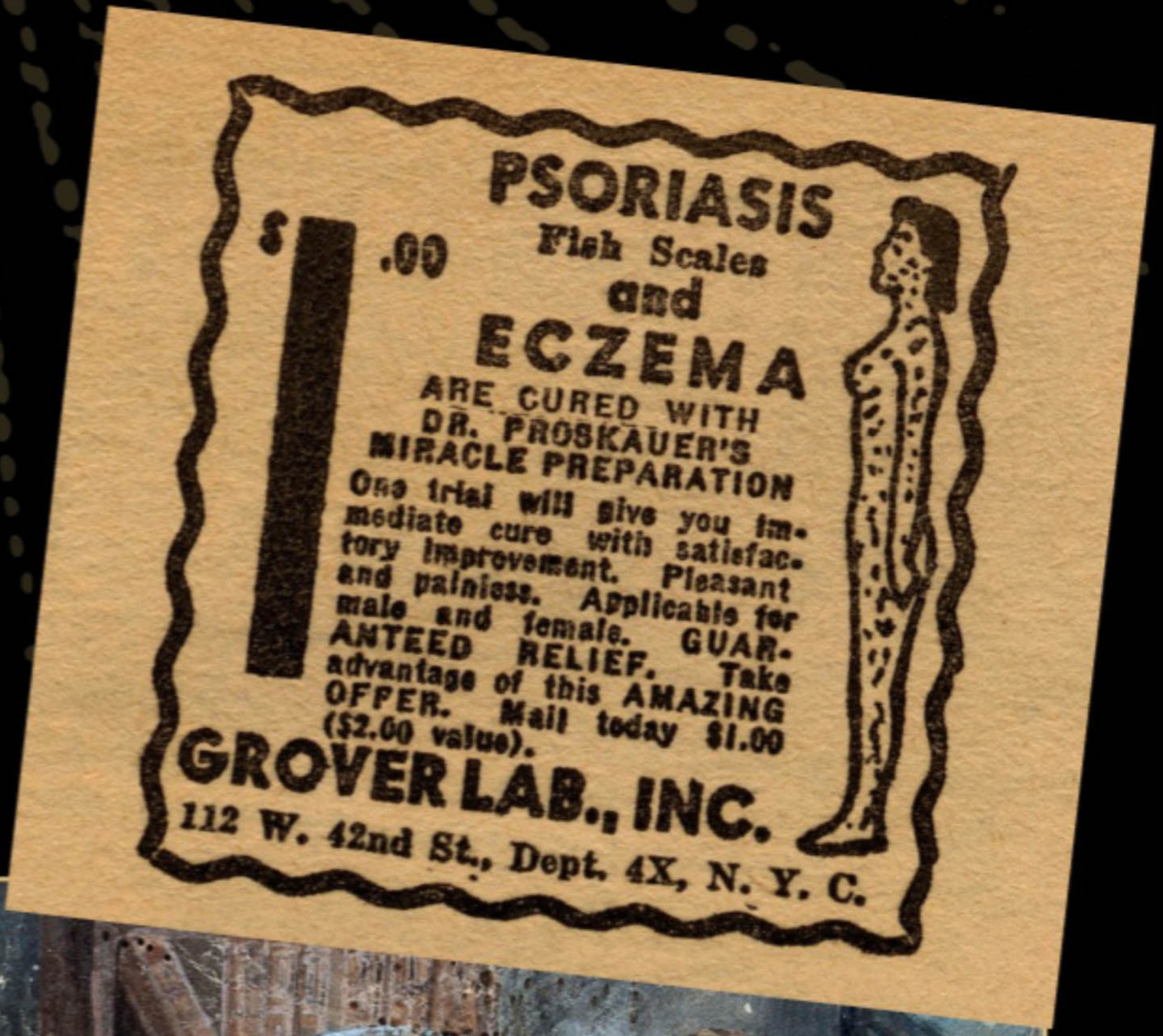

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The read Sea: the read Sol: the read Elixir vitæ
Luna in crescendo
PARACELSUS

Alchemy enters Europe

Alchemy was a lost art in Latin Europe until bold translators of Arabic works began its reintroduction. Once again, it grabbed the scholarly imagination

Written by Ben Gazur

On 11th of February 1144, a monk laid down his quill on a work that would resonate throughout Europe for centuries. Robert of Chester had just completed his translation of an Arabic text that first introduced the word alchemy to Latin Europe. We know the exact date because he tells us in his preface to *Liber de compositione alchimiae* – The Book of the Composition of Alchemy. He undertook this work "because our Latin world does not yet know what alchemy is." Very soon everyone would have heard of it.

OUT OF IBERIA

Often Europe of the Middle Ages is considered as a monolithically Catholic Christian area. This is far from the truth. The Iberian Peninsula, including much of what we now call Spain, was under the control of Muslim rulers. This area, known as Al-Andalus, began in 711 when a force under the Ummayad caliphs invaded from North Africa.

Within 40 years most of the peninsula was under Ummayad control and the kingdom of the Franks was being threatened by their forces. Only with great difficulty was the expansion of the Muslim forces stopped at the Pyrenees. Portions of Iberia would remain under Muslim control until the surrender of the Kingdom of Grenada to Isabella of Castile in 1492. In the intervening years, however, the regions of Muslim Iberia would be among the most advanced in all of Europe.

The mixing of Arabic and Latin influences in Al-Andalus allowed for an unprecedented exchange of knowledge between the Islamic and Christian worlds. Al-Andalus became the place to go for European scholars looking to learn all that could be learned at the time. Arabic scholars had one great advantage over their European rivals at this time – they had access to the great works of Greek science and literature that had long been lost in the West.

Greek had once been the lingua franca of the ancient world and many learned treatises were written in it. As Latin overtook it in western Europe as the language of education, many works and writers were forgotten. After the Arab conquests of the 7th century, translations of these texts in Arabic became freely available. Now if a Latin speaking scholar wished to know what Galen or Aristotle wrote they had to learn to speak Arabic.

This is exactly what Robert of Chester did. In the 1140s he travelled from England to Al-Andalus and translated several important works from Arabic to Latin. As well as his alchemical translations he produced a Latin version of Al-Khwārizmī's book about mathematics, which introduced the idea of algebra to the West.

ROBERT WHO?

Robert of Chester was far from the only scholar to beat a path to Al-Andalus to learn from Arabic sources. Pope Sylvester II had spent time there during his education, which led to suspicions that he had been taught dark and heathen magic such as the creation of a brazen head that could answer any question put to it. Despite the dark mutterings that might have attached to some of the wisdom learned in Al-Andalus, many others saw training there as a stepping stone to academic advancement. So many went that there is some confusion as to who deserves the credit for some of the translations of the time.

Robert of Chester, Robertus Castrensus, is usually said to be the author of the Latin translations mentioned above, but there is some

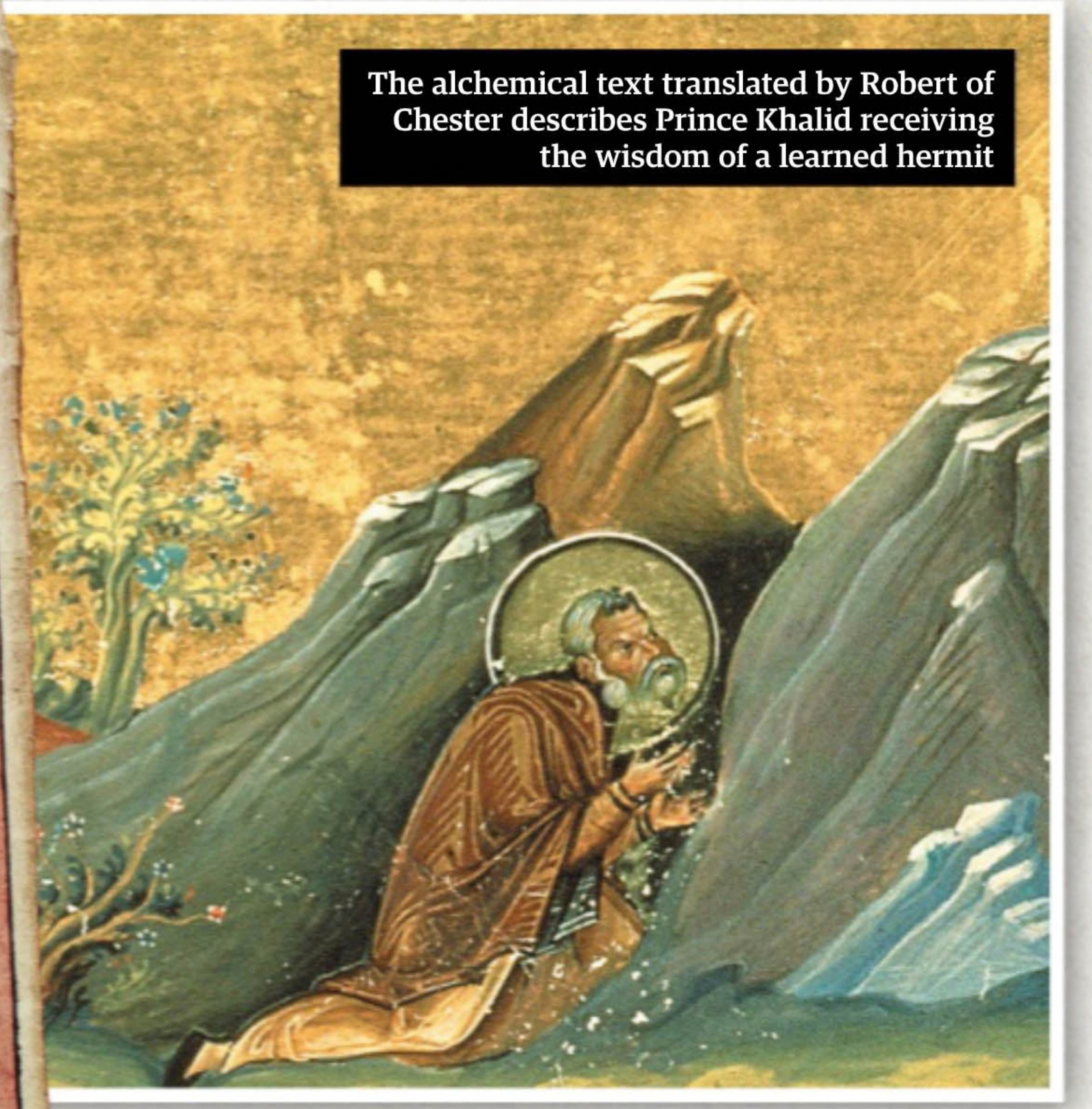
Images source: Getty

Scholars from across Europe travelled to Spain to study under Arabic teachers and returned with knowledge of many lost arts - including alchemy

© Getty

The read Sea: the read Sol: the read Elixir vitae
luna in crescente

As well as introducing the word alchemy into Latin, Robert of Chester described what would become known as the Philosopher's Stone



The alchemical text translated by Robert of Chester describes Prince Khalid receiving the wisdom of a learned hermit

> "Morienus uses the metaphor of the tailor to explain how many things can be made out of a single prime substance"

confusion between Robert of Chester and one Robert of Ketton. Like Robert of Chester, Robert of Ketton was an Englishman who went to Al-Andalus in the 1140s to translate Arabic texts into Latin. Because of their similar names and the scarcity of records in the past, the two have often been conflated into a single individual.

While we know little about Robert of Chester except what he himself put into his works there is rather more on record about Robert of Ketton. Robert of Ketton undertook the first translation of the Quran into Latin, though he called it "The Law of the False Prophet Muhammed". His later career as a clergyman and royal advisor is well documented. Most historians are convinced that the two Roberts really were different individuals doing similar work at the same time.

THE LEGEND OF KHALID

Robert of Chester's alchemy book *Liber de compositione alchimiae* was based on an Arabic text called *Masā il Khālid li-Maryānus al-rāhib* – Questions of Khalid to the Monk Maryanus. This work, likely from the 9th or 10th centuries, purports to retell the tale of the meeting between Prince Khalid and a hermit skilled in alchemy, Maryanus. Morienus, as his name is translated, proceeds to impress his royal pupil with his wit and wisdom. In Robert of Chester's retelling of events Morienus is a pious Christian from whom the Muslim Khalid learns, while in the Arabic original he is simply described as a "Greek".

Morienus cautioned Khalid that "The ancients, however, did not refer to the matters pertaining to this science by their proper names, speaking instead, as we truly know, in circumlocutions, in order to confute fools in their evil intentions."

This is a point on which the royal interlocutor is not satisfied and asks for plain language to be used.

The royal Khalid sometimes becomes impatient with the riddling nature of some of the answers. When his request to know where the Philosopher's Stone is, and how it can be inside everyone draws an uninformative answer, however, Morienus simply shrugs and replies that he has already answered.

Morienus uses the metaphor of the tailor to explain how many things can be made out of a single prime substance. A tailor

Images source: Wiki

may take a piece of cloth, cut it in a number of ways, and make many different garments. In the same way the alchemist takes matter, pulls it apart, and reforms it to his desired end. Morienus does indeed use some of the same language that will be repeated for centuries in European alchemy.

When pressed he explains his meaning. "The green lion is glass… and the stinking Earth is stinking sulphur… But red fume is red Auripigmentum, also white fume is Argent Vive, and citrine fume is citrine sulphur… Behold now I have expressed to you the names of kinds, of which three will suffice you for the whole Magistery: that is, white fume, the green lion, and stinking water."

ALCHEMY FINDS A HOME

Robert of Chester's translation of Arabic works into Latin would not be the last. When Robert of Chester used the word *alchemia* he was not discussing the wider subject as we would know it but rather just what would become the Philosopher's Stone. Alchemia was a "substance… [that] naturally converts substances into better ones." Only with later translations of Arabic texts would the word alchemy come to take on its full meaning. It should not be supposed however that as soon as Robert of Chester set down his quill in 1144 that the whole of Europe became enamoured with alchemy. The spread of this secret knowledge took quite some time. When Roger Bacon came to advise the Pope on matters of education over a century later, he felt it necessary to explain just what alchemy was to the pontiff.

"There is another science which is about the generation of things from the elements, and from all inanimate things,… of which we have nothing in the books of Aristotle; nor do natural philosophers know of these things, nor the whole Latin crowd of Latin writers. And since this science is not known to the generality of students, it necessarily follows that they are ignorant of all natural things that follow there from… And this science is called theoretical alchemy, which theorises about all inanimate things and about the generation of things from the elements."

After the first translations were made out of Arabic, however, European alchemists soon began to create their own works rather than rely on the borrowings from others.

They used the mystical and metaphorical language of the historical alchemists they found in the translations, but used them for their own ends. Robert of Chester had introduced alchemy to a fertile field of imagination.

While European alchemists were creating their own theories, however, they did acknowledge the founders of their art. Many published their works not under their own names but under those of Arab thinkers such as Jabir, al-Razi, and ibn-Sina.

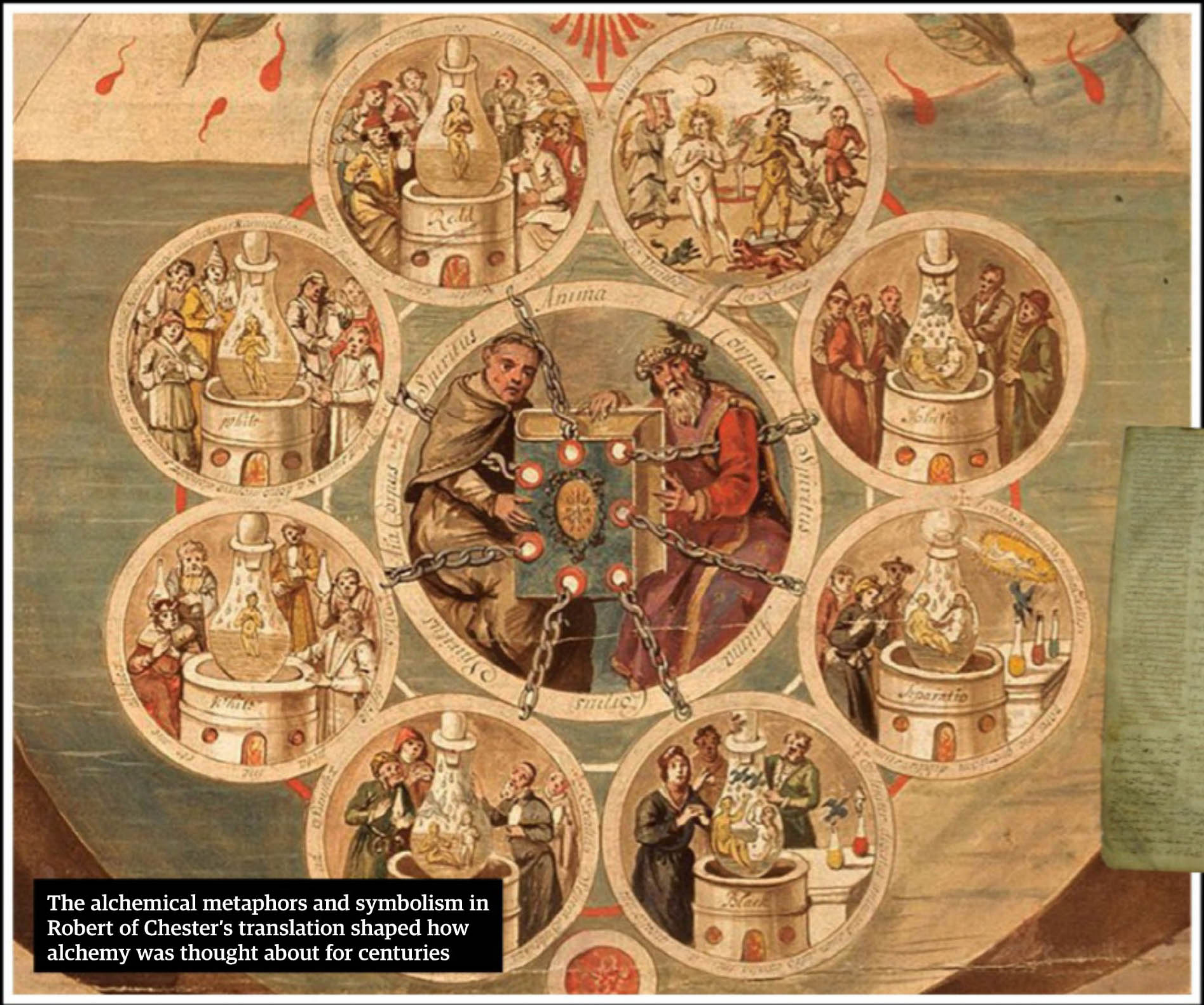
Robert makes a boob

Translation can be tricky work. The subtle meanings of a word can be lost when they are transferred from one language to an altogether different one. Sometimes the mistakes made in translation can come from a complete blunder, but last for centuries.

When Robert of Chester came to translate Al-Khwārizmī's book on algebra he came across a word for a trigonometric function of an angle. This text used the Arabic word *jb* to describe the ratio of the length of the side of a right-angled triangle that is opposite an angle to the length of the longest side. Today we would call this function sine, but that is only because Robert of Chester made a mistake in his translation.

The text he was translating had imported a Sanskrit word, *jya-ardha* (shortened to *jya*) into the Arabic work without translating it, merely spelling it phonetically as *jiba*. Since Arabic is written without vowels, this appeared as *jb*. Robert took this word to be *jaib*, meaning breast or bosom, and translated it literally into Latin as *sinus*. Thus, whenever a sine function is being used, you can think of Robert of Chester and the time he failed to get fully abreast of his subject.

Even the most careful scribes could make mistakes when faced with a text in a different language on a technical subject



The alchemical metaphors and symbolism in Robert of Chester's translation shaped how alchemy was thought about for centuries

The inability to read Greek texts, such as Euclid's *Elements*, meant that knowledge of them often came via Arabic translations

Roger Bacon

Britain's first scientist?

Both a Franciscan friar and extraordinary scholar, Bacon's work was groundbreaking, yet he leaned towards the arcane in his dealings with alchemy

Written by Dee Dee Chainey

Roger Bacon was a 13th-century scholar whom many believe became a friar in around 1257. Details surrounding his early life are scarce, with no records of the date or place of his birth, yet many give the date as being around 1214 or 1220 and the location as Ilchester in Somerset.

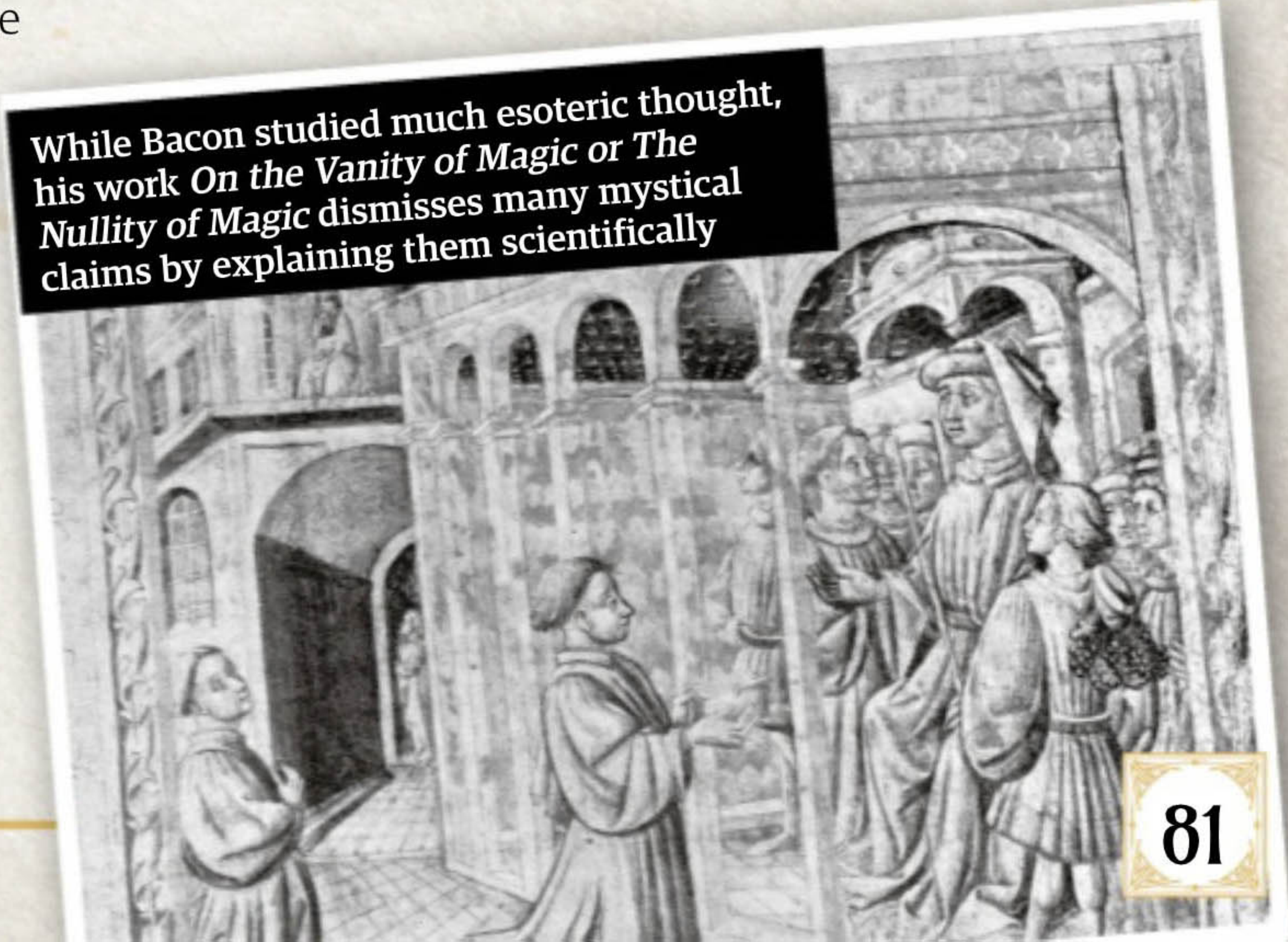
Bacon was a firm believer in empiricism – that something can only be understood through direct experience – and his studies explored many of Aristotle's teachings. During his lifetime he excelled in scientific thought, making many pioneering discoveries in many areas, including the study of optics and astronomy.

Born into an affluent family, he had a successful career, and he's believed to have taught at the universities of Oxford and Paris. Many credit him as Britain's first scientist, yet others argue that this title should in fact go to the first Chancellor of Oxford University, Robert Grosseteste, who may well have taught Bacon.

Bacon's work culminated in the authorship of a scientific encyclopaedia titled *Opus Majus*, which was commissioned by Pope Clement IV himself in 1266 and acted as a guide to the natural world and humankind's relationship to God, science and the heavens (oddly, Bacon never received feedback from the pope on this work). He followed this volume with *Opus maius* and *Opus tertium*, summaries of the larger encyclopaedia, but these are believed to have been lost.

Nicknamed 'Doctor Mirabilis', Bacon was forever drawn to the esoteric arts, and his studies sojourned into the realms of alchemy and magic. One of the most fantastic stories surrounding Bacon is that of the 'Brazen Head', the creation of a mechanical automaton attributed to him, leading to his reputation as a wizard and necromancer. However, a letter exists revealing much of Bacon's alchemical formulae – some of which pertains to the Philosopher's Stone – that dismisses necromancy entirely. It is now thought the letter may be a forgery. *The Mirror of Alchimy*, a work focused on the transmutation of metals, is attributed to Bacon, yet some consider it the work of another author. The fabled Voynich manuscript is also credited to Bacon.

Despite his success, the end of Bacon's life was steeped in controversy. Many believe his unconventional romps into the arcane eventually led to his disqualification from the Franciscan order. It's said that he was incarcerated for perceived crimes that contravened the Condemnations of 1277, which forbade certain theological topics and Aristotle's ideas on natural philosophy to be studied. Many scholars now argue that his supposed incarceration dates to after his death so question its veracity. What isn't in doubt is that Bacon died around 1292 in Oxford.



While Bacon studied much esoteric thought, his work *On the Vanity of Magic or The Nullity of Magic* dismisses many mystical claims by explaining them scientifically

Images source: Wiki

Legends and pseudonyms

What is in a name? When it comes to alchemical writings the author may not be all they claim to be

Written by Ben Gazur

One of the joys of being a writer is seeing your name in print (see my own humble byline above) yet in the past many authors of alchemical texts hid their identity behind pseudonyms. Were these noms de plume a method of concealment or conceit? As with everything in the world of alchemy, the answers can be hard to riddle out.

LONG AGO AND FAR AWAY

Almost as far back as we look in the history of alchemy we find alchemists adopting different personas in their work. One of the texts in the Byzantine collection known as the 'Corpus alchemicum graecum' is called *On Natural and Secret Things* and is attributed to the ancient Greek philosopher Democritus. While Democritus, father of atomic theory, lived in the 5th century BCE, this work is no earlier than the 1st or 2nd century CE. Why was someone pretending to be Democritus?

An old name is a respectable one. There has always been the notion that the past was a Golden Age and those who lived in it were wiser than we are today. If an idea was first thought up by one of the great thinkers of antiquity then it was more likely to be believed. Since Democritus had probed into the secrets of nature and lived many centuries before, any ideas ascribed to him were bound to gain attention. Whoever the pseudonymous author of *On Natural and Secret Things* was they got that right at least – here we are discussing their work almost two millennia later.

We can also see this technique being used in a work called *Turba Philosophorum* – the Assembly of the Philosophers. Here the text is anonymous but it deals with matters relating to alchemy by setting out its arguments as a discussion taking place between a group of pre-Socratic philosophers like Anaxagoras, Empedocles, Leucippus, and Pythagoras. As alchemy moved into Medieval Europe the practice of attaching pseudonyms to

Images source: Wiki

Many alchemical texts used the names of famous clergymen and philosophers, but they didn't really author them

The writings of alchemists were often hidden behind complex codes and published pseudonymously alchemical texts was imported along with the rest of the secret art. While there was an obvious hostility towards people viewed as infidels by Europeans, there was also a respect for Arabic abilities and learning. Pope Sylvester II was educated in the Muslim cities of Spain in the 10th century and many of his contemporaries considered his learning to be diabolical at the same time as they acknowledged its power. All knowledge derived from far away was thought to be potent, if tinged with a darker aspect. Jabir ibn Hayyan, known in the West as Geber, lived in the 8th century CE and a vast library of around 3000 learned works has attached itself to his name. Some are undoubtedly by Hayyan but much of the work associated with his name was created in Europe to benefit from the awe in which Arabic scholarship was held.

A legend that biblical figure Moses invented the arts and sciences saw him conflated with an alchemist of the same name

Pseudo-Geber, as the various authors of the later Jabirian texts is known, wrote on everything from alchemy to medicine to magic. Often composed in an esoteric style with a difficult to comprehend vocabulary, there are those who claim the word gibberish derives from the name Geber.

The *Summa Perfectionis* written under Geber's name in the late 13th century became one of the essential texts for European alchemists for the next 400 years.

If an author was thought of as both being from an earlier time and touched with the idea of otherness then they gained credibility from both. A book purporting to be from the 14th century appeared in 18th century Leipzig and was sold as if authored by Abraham Eleazar, who had allegedly been the mentor of the 'famous alchemist' Nicolas Flamel. The possible real author of this book, whose name also appears on the title page, Julius Gervasius, may be yet another pseudonym.

Even at this relatively late date in the history of alchemy there was still a tendency to look backwards for truth rather than trust the studies of contemporaries. But another reason to work under a borrowed name was to get a wider audience.

A GOOD NAME

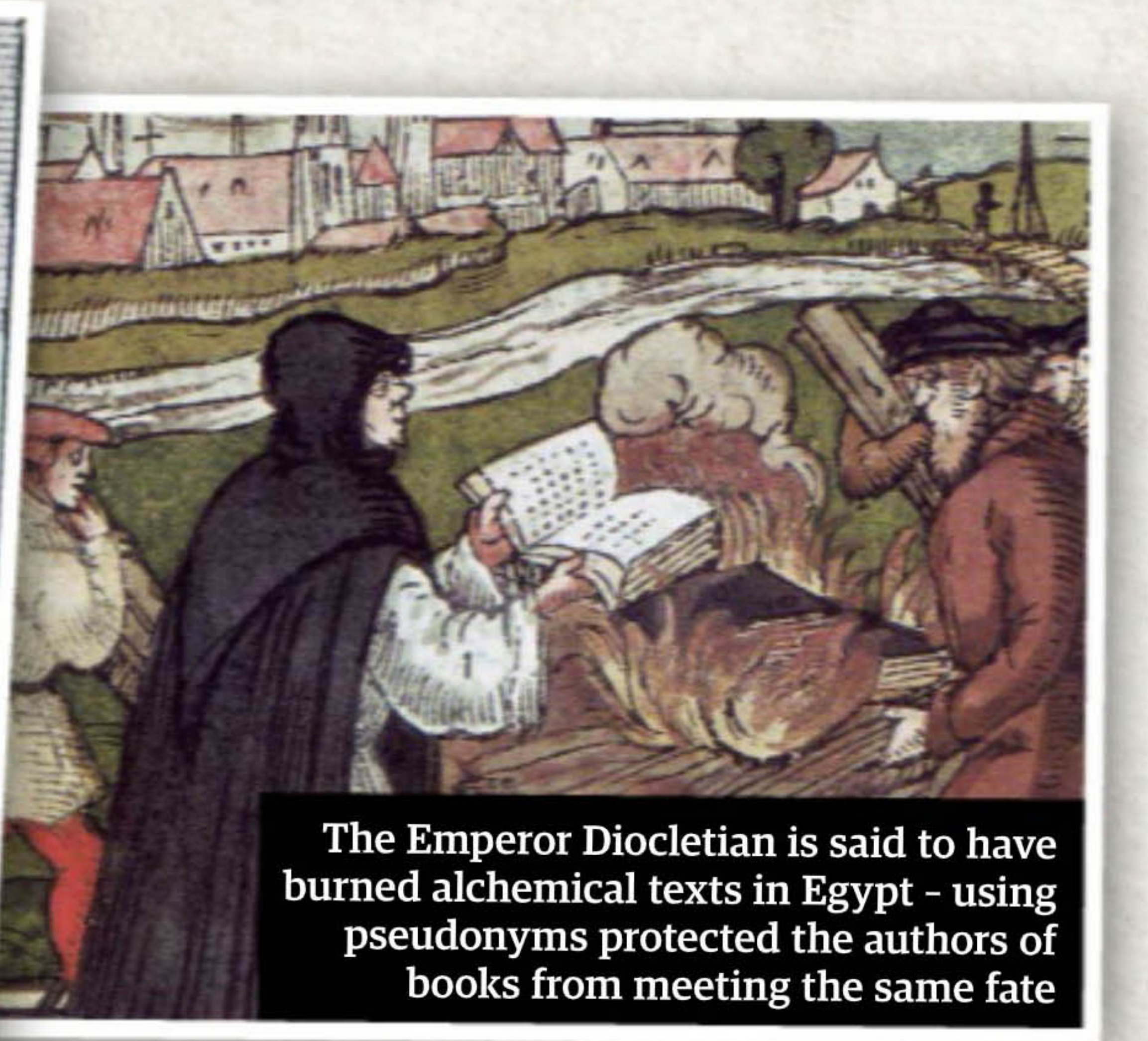
There is a reason why publishers of popular authors give over a large part of their front covers to the author's name. A good name is a good advert. The same has always been true. If a book is to thrive then the reading public must have trust in the writer's abilities. For alchemical texts this sometimes led to the creation of showy pseudonyms or the appropriation of another scholar's name. *The Twelve Keys of Basil Valentine* was published in 1599 and purported to be the work a canon in a Benedictine monastery.

Those with a smattering of Greek and Latin would have been able to read his nom de plume – Basilius Valentinus – as a pun on "Basileos valens" meaning "Powerful king". Branding has always played a role in selling books.

For those who wanted the widest readership then a name that was already famous was the way to go. Moses was sometimes invoked as the author of alchemical treatises, which conflated two heroes of knowledge. The biblical Moses was thought to be one of the great sages of wisdom, and magical powers were attributed to him, while a later Moses of Alexandria wrote on alchemy in the 1st century CE. Authors who used the pseudonym Moses used the ambiguity to create a greater aura of authority for their works.

Religious figures were popularly thought to be adepts of the art of alchemy. Their learning and understanding of the mystical nature of the divine would have given them valuable insights into the depths of alchemical knowledge. The respect they were held in made their names intensely tempting for writers to borrow.

Some pseudonyms, like that of Abraham Eleazar, suggested a link to other great alchemists of the past



The Emperor Diocletian is said to have burned alchemical texts in Egypt – using pseudonyms protected the authors of books from meeting the same fate

Such was his scholarship that Albertus Magnus was known in his lifetime as the Universal Doctor. In the centuries after his death the prestige of many manuscripts was increased by saying they came from Albertus' hand.

One book, known as *The Grand Albert*, supposedly revealed everything from the properties of metals to "the secrets of women".

One legend has it that Albertus Magnus really did discover the Philosopher's Stone and passed it to his student, the future St Thomas Aquinas. Since Thomas died before Magnus this seems somewhat implausible. Still St Thomas Aquinas' reputation as one of the foremost philosophers of the church led to his name being used as the pseudonym for the author of *Aurora Consurgens*. The heavily illustrated text uses the mystical symbolism common in alchemical treatises while the accompanying Latin style is quite unlike anything written by the historical St Thomas Aquinas.

Some figures who are popularly thought of as great alchemists never researched, wrote about or practiced alchemy at all

Ramon Llull is famous for his *Ars Magna*, a work designed to show how truth is to be found by logic. Among the many topics he wrote on was his distaste for alchemy. It is ironic then that a large corpus of work was produced under his name that delved so deeply into alchemy. Pseudo-Llull turned this disapproval on its head. In the *Testamentum*, supposedly by Llull, we see a conceptual shift in European alchemy, away from the base search for riches and instead towards the ideal of perfecting all of nature.

Arnald of Villanova was not in the same class as a theologian as St Thomas Aquinas. Primarily known as a medical doctor to popes and kings, he did meddle in theology when he predicted the Antichrist would appear in the year 1368.

This got him in trouble with the faculty at the University of Paris. His, therefore, was a good name to use for those who wanted to show free thought, and the Pseudo-Arnald texts often treat in dangerously heretical thoughts. The changes undergone by mercury during alchemical experiments are likened to the torturing, death, and resurrection of Christ. Much safer to ascribe these ideas to someone long dead than own them yourself.

HIDDEN LIVES

The final reason to adopt a pseudonym when writing about alchemy was to protect yourself. Alchemy did not sit well with either church or state. The church feared people using witchcraft to pervert God's creation, while many monarchs worried about how alchemists' gold would ruin the economy. Using a pseudonym could be the best way to ensure that it was your books that were burned in the town square rather than your body.

Sometimes, though, it was simply to protect your reputation that you would resort to creating a new persona to write under. As alchemy gave way to chemistry, to be thought an alchemist was to be a figure of fun. Ben Jonson's comedy *The Alchemist* lampooned searchers for the Philosopher's Stone as fools. No wonder then that when Isaac Newton set his mind on alchemy he fashioned a new name for himself – Jehovah Sanctus Unus.

Pseudepigraphy and pseudonyms

Pseudepigraphy, the writing of texts under another person's name, has a long and not entirely dishonourable history. Many authors in the past borrowed a name for many of the same reasons as alchemists chose to. Almost as soon as writing came to be used so did the co-opting of antique names for their own purposes.

Some texts that may have been created anonymously in the ancient Greek world had another name attached to them by tradition. Mystical works relating to the afterlife and the nature of reality had a tendency to be described as the works of Orpheus.

There was a thriving trade in manuscripts that were thought to be by famous writers. If someone could produce a new and undiscovered work by Plato then the scrolls would fetch a huge price. While most of the works currently described as Platonic are thought to be genuine, several are thought to be spurious. Perhaps the best, and most contentious, examples of pseudepigraphy come from the Bible. Tradition has St Paul as the author of many epistles in the New Testament but scholars have raised questions over at least six of them. None of the four canonical gospels is by a known author but are instead named for people assumed to have written them.

Famous names tended to be attached to texts in antiquity like the *Homeric Hymns*, which were never composed by Homer – if he existed at all

Images source: Wiki

The Flamel fallacy

Oh, Potter, you rotter, oh, what have you done?

Written by April Madden

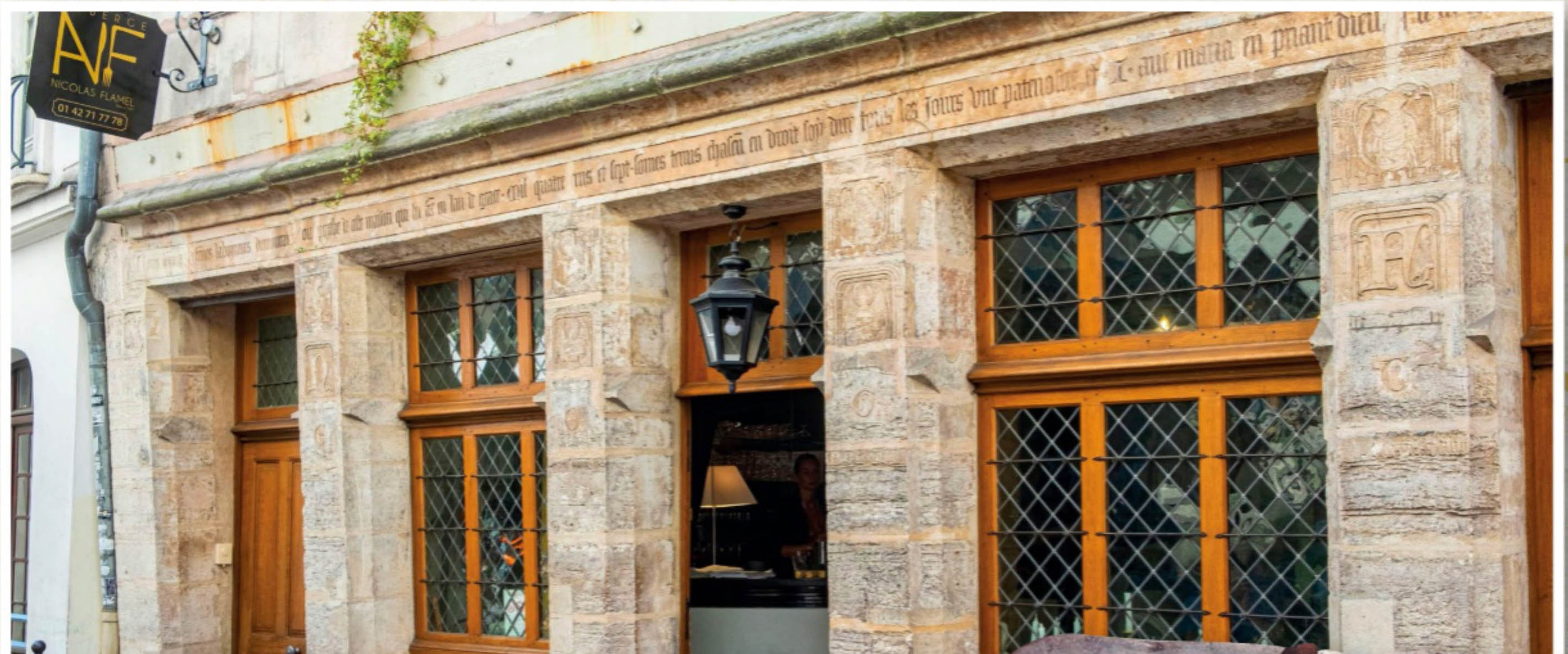
Nicolas Flamel is now best known as a character in the Harry Potter universe (seen here in 2018 film *Fantastic Beasts: The Crimes of Grindelwald*). Fiction, in the shape of alchemical legend, took over the pious, altruistic bookseller's real legacy centuries ago

© Alamy

In the 14th and early 15th centuries, a bookseller lived in Paris. He married a wealthy, twice-widowed woman, and together the two devout Roman Catholics, though sadly childless, built up their business, accrued a property portfolio, made generous philanthropic donations and commissioned statues for their local church. The wife, Perenelle, predeceased her spouse in 1397 and left him her fortune, although her sister and brother-in-law later countersued the grieving husband for the money – 5,300 Tours pounds. The charitable, religious widower lived another 21 years at 51 rue de Montmorency, designing his own tombstone eight years before he was buried beneath it in the churchyard of the now-defunct Saint-Jacques-de-la-Boucherie in 1418. His name was Nicolas Flamel.

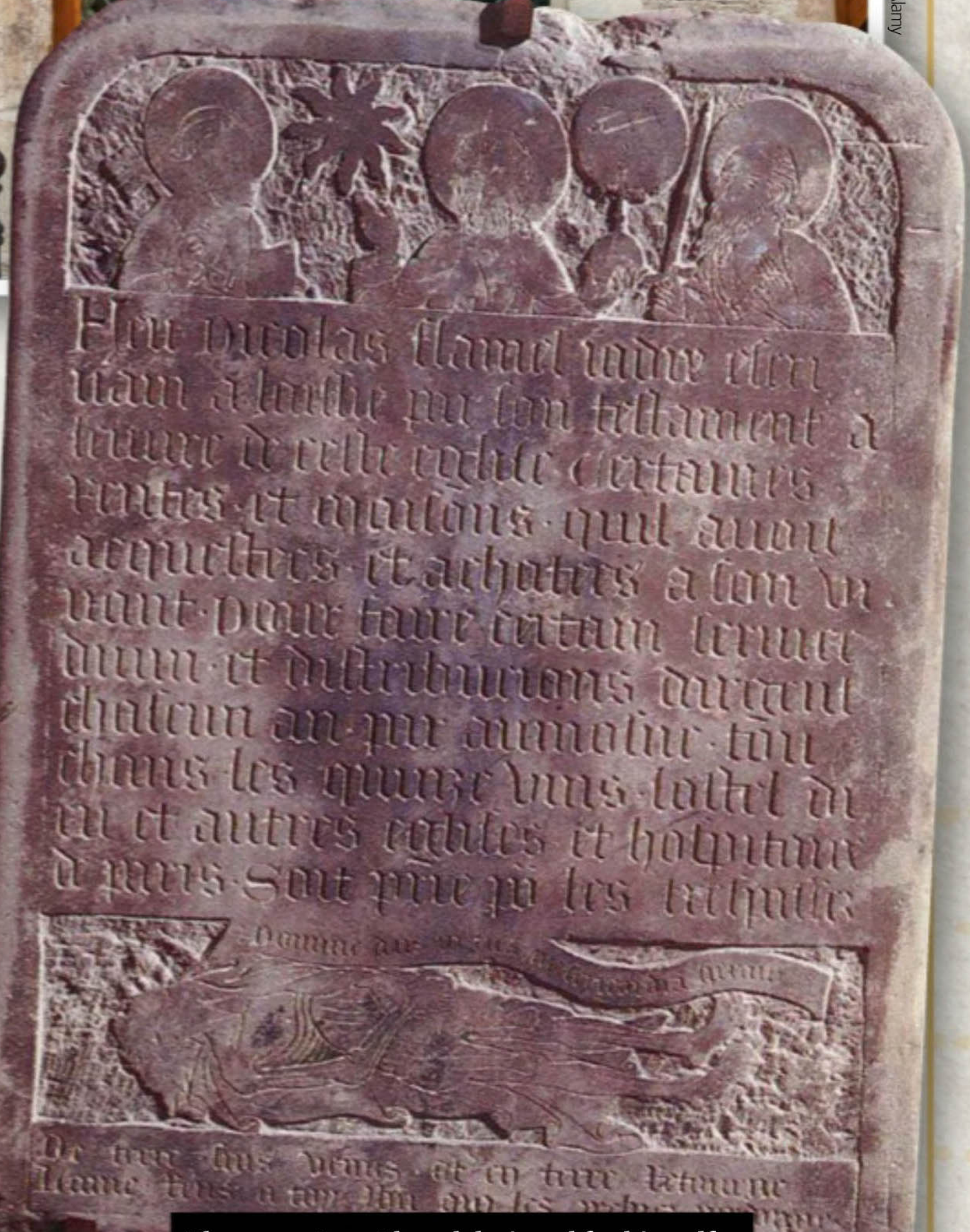
A couple of hundred years later a legend began about the unassuming couple from Le Marais. It claims they met a mysterious Jewish convert to Catholicism on the great pilgrimage road to Santiago de Compostela in Spain. This 'converso' showed Nicolas and Perenelle the deepest secrets of alchemy, including chrysopoeia and the elixir of immortality, by teaching them how to make the Philosopher's Stone.

In 1612 a book was published by P Arnauld de la Chevalerie, purportedly written by Flamel, entitled *Exposition of the Hieroglyphical Figures*. It



Flamel's house, with its elaborately carved facade, at 51 rue de Montmorency in Le Marais, Paris. It's now a restaurant called Auberge Nicolas Flamel

© Alamy



The gravestone Flamel designed for himself was unearthed beneath the churchyard of Saint-Jacques-de-la-Boucherie. It's now in the Musée de Cluny

© Wiki

> "The legend claims that the Flamels met a mysterious Jewish convert who showed them the secrets of alchemy"

supposedly contained designs the Flamels had planned to commission for a decorative frieze in a church – Nicolas' home and tombstone were both covered in florid, mysterious carvings of his own composition. It also purported to contain the mystical text of *The Book of Abramelin the Mage*, which apparently Nicolas had purchased early in his bookselling career and devoted his life to translating. According to an extant copy's text, however, Abramelin's Book was revealed to a German named Abraham of Worms in 1458 – well after the Flamels had died.

Nonetheless, the story has gained traction over the centuries because it has enough grains of alchemical coincidence scattered through it to pique the imagination. The mysterious Jewish converso is reminiscent of the Gnostic Judeo-Christians of 3rd-century Alexandria. The iconic pilgrimage route is dedicated to the same saint (James the Great) as the church the Flamels donated so much to and were buried at. St James himself is associated with a Gnostically flavoured apocryphal text called *The Secret Book of James*, apparently containing occult teachings given to him by Christ after the Resurrection. It's all starting to get a bit Dan Brown.

The tale was first questioned in 1761 by Etienne Villain, who claimed that de la Chevalerie must have written it himself, but that didn't stop the Pseudo-Flamel's supposed book and its legend having a profound effect on figures as diverse (though alchemically minded) as Isaac Newton and Aleister Crowley, not to mention author JK Rowling, who featured the completely fictional alchemist Flamel as a key character in the Harry Potter universe.

> The legend of Nicolas Flamel became so well known that Victor Hugo mentioned him in *The Hunchback of Notre Dame*

Images source: Wiki, Alamy

Panaceas: a universal medical solution

When it comes to medicine, doctors have long strived for a cure-all solution, but some alchemists claim to have already found it with their panaceas...

Written by Poppy-Jay Palmer

Doctors have long dreamed of a remedy to cure all illnesses, but as far as some alchemists are concerned that remedy already exists. For a 'one size fits all' medical solution, look no further than the panacea.

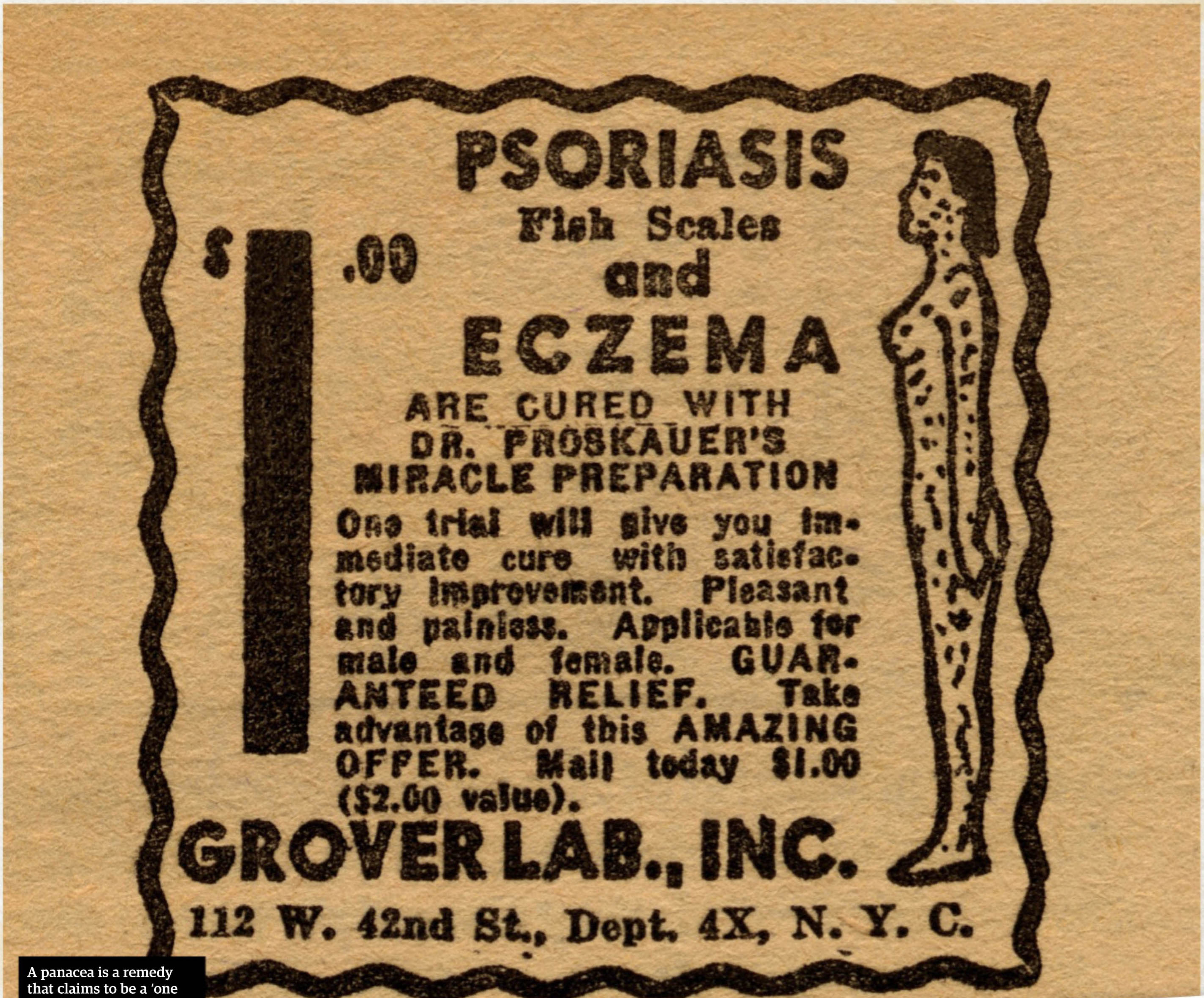
Named after Panacea, the Greek goddess of universal remedy, the term 'panacea' refers to any supposed remedy that claims to be able to cure all diseases and prolong life indefinitely. Though such a powerful remedy sounds unbelievable, many ancient alchemists put time into seeking out a true panacea. They imagined that if such a thing existed it could well be a connection to either the elixir of life or the legendary Philosopher's Stone, a mythical substance that would enable the transmutation of common metals into gold.

People have never stopped searching for a cure-all: the Cahuilla Indian people of the Colorado Desert region of California used the red sap of the elephant tree as a panacea of sorts and found it useful for treating skin disorders and other diseases. But one of the most famous historical panaceas was that created by German healer Gerog am Wald, a physician and surgeon who referred to himself as 'doctor of both medicines'.

After originally training as a lawyer, am Wald received a medical degree from the Palatine Count in Padua in 1578, but said degrees were also known to have been bought and sold, so there is no knowing whether am Wald was suitably qualified or not. After failing various exams and being driven out of his home town, he bought a castle and began making and selling alchemical cures.

In the 1590s, am Wald concocted a cure-all remedy he called the Panacea Amwaldina and published a treatise on it, which he then revised and expanded several times. Many historians believe that the Panacea Amwaldia became the first alchemical remedy to be called a 'panacea'. Though am Wald claimed that his panacea could cure all ailments and illnesses on its own, he rather strangely included it in the ingredients for a number of different recipes, which he insisted could be used for a quicker cure.

Gerog am Wald kept the recipe for the panacea itself a secret and never divulged its ingredients throughout his life. In order to cure themselves, his patients needed to purchase both the recipe book and the panacea, which has lead some people to believe the panacea was a fake.



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A panacea is a remedy that claims to be a 'one size fits all' medical solution, like 'miracle' pills and creams

Images source: Wiki, Getty

People continue to look for a true panacea, with countless cure-all herbs and concoctions claiming to be the answer

Kabbalah

Drawing upon Judaism, Kabbalah is a mystical tradition that centres on receiving knowledge of God and guidance for everyday living

Written by David Crookes

Think of the mystical religion Kabbalah, and many will immediately picture the singer Madonna. As one of a number of celebrities to embrace its ancient wisdom in recent years, she has sought to study and understand Kabbalah's deep teachings, often in the face of great criticism. Through her efforts, people have learned of some aspects of the religion, not least the strand of red-string bracelet that many contemporary followers wear to ward off the evil eye.

But Kabbalah is no celebrity fad, nor is it by any means a newfangled religion. It's the theology of the Jewish people and the spiritual study of unseen laws governing the universe from the perspective of Judaism. Those who follow it have done so because they believe it gives them a great understanding into the workings and the structure of the human soul. Indeed, its origins are said to stretch back to the Holy Scriptures, to Adam, the first man.

According to Kabbalistic tradition, Adam was both the spiritual and biological ancestor of humans and he was also androgynous. He was split into two halves after eating from the tree of knowledge of good and evil but then received his teachings for mankind through the Archangel Raziel, the Keeper of Secrets. Kabbalists believe man and woman must merge in marriage to form a full soul. More than that, tradition teaches the souls of all humans combine to form one soul, which is that of Adam.

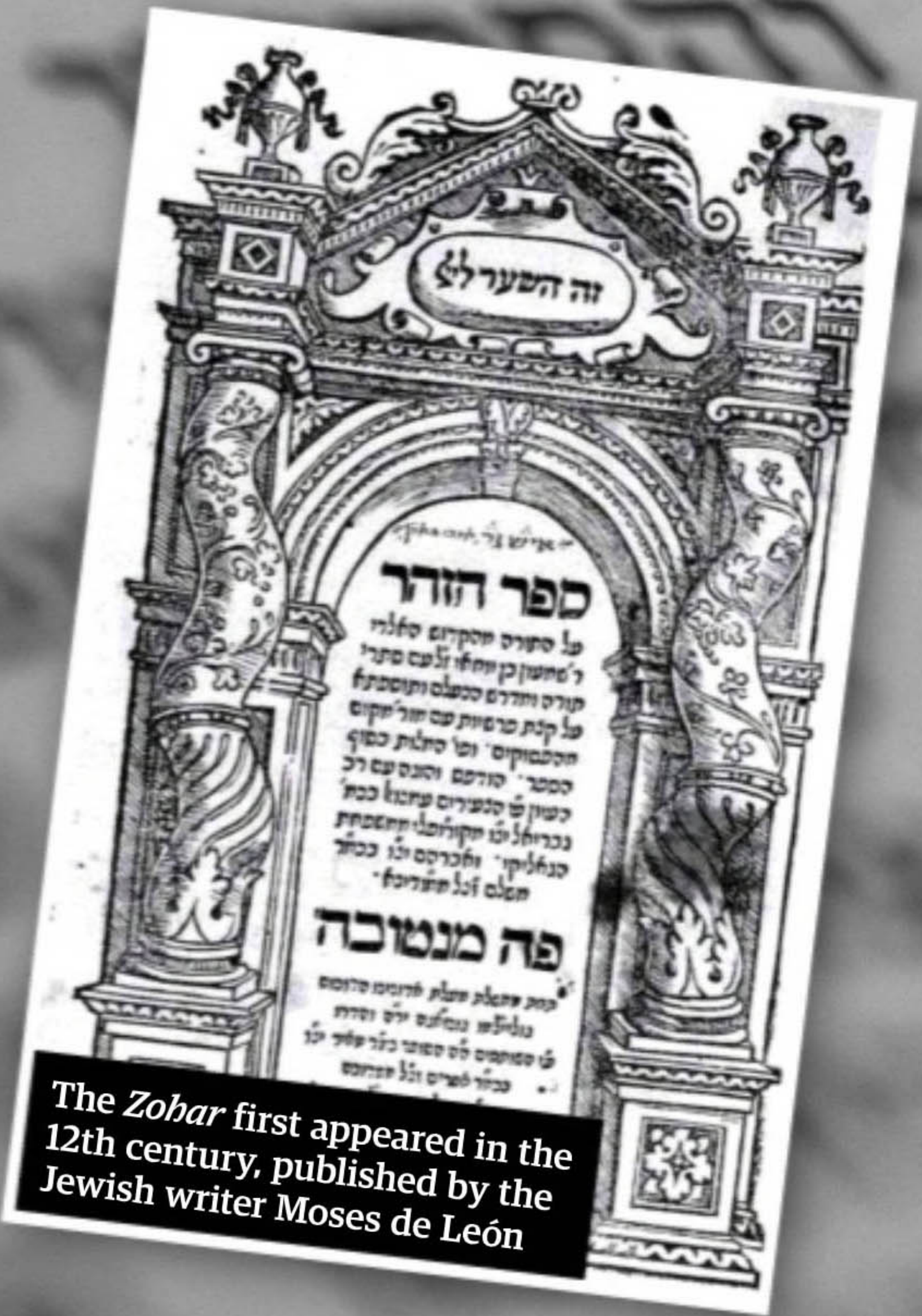
Abraham also figures highly in Kabbalah, as he does in Judaism as a whole (he is seen as the founding father of the Covenant). Traditional Kabbalists believe Abraham, who lived around 1,700 BCE, received the truth of Kabbalah and wrote the *Sefer Yetzirah*, the earliest extant book on Jewish esotericism and the first Kabbalistic text. For that reason, it has become a primary source for students of Kabbalah and it also reinforces Abraham's view that God is One.

Such beliefs were cemented by the prophet and teacher Moses who ascended Mount Sinai and received the Commandments from God along with the Oral Torah. The latter contained the laws, statutes and legal interpretations that had not been noted in the Written Torah (the Five Books of Moses) and the Kabbalistic truths they contained paved a spiritual level of existence that explored the nature of the soul. Bodies were seen as temporary; souls ever-lasting. Fundamentally,

Images source: Alamy, Wiki

Although Kabbalists say that humankind's greatest pleasure is to know God, their view is that knowledge of God is impossible

> "Kabbalah is the spiritual study of unseen laws governing the universe"



זה השער לה׳

ספר הזהר

פה מנטובה

The *Zohar* first appeared in the 12th century, published by the Jewish writer Moses de León

This a fragment of the *Zohar*, a collection of commentaries on the Torah which forms a primary book for Kabbalists

The Tree of Life with its ten sefirot, as presented in the *Sefer Yetzirah* which is the earliest extant book on Jewish esotericism

Kabbalah became a way for Judaism to understand God and receive his knowledge.

To that end, Jews sought to pass down their knowledge through the generations, even though they had suffered from oppression throughout the Roman Empire. From about 100 BCE to 1000 CE, for instance, Merkabah mysticism had emerged as a school of early Jewish mysticism and the mystics focused on the Book of Ezekiel in the Hebrew Bible. The first chapter centred on the prophet Ezekiel's vision of riding to the heavens in a divine chariot. Mystics sought to interpret the meaning of the vision and what it said and revealed about God.

The idea manifested itself in a study called ma'aseh merkabah which taught that the path to God was strewn with obstacles and encouraged Jews to train their minds in order to connect on an emotional as well as physical level. Meanwhile, ma'aseh bereshit emerged as a mystical understanding of verses in the Book of Genesis. It interpreted the first chapter as a dichotomy of upper and lower worlds split between God and humans. Kabbalah grew from both studies as followers sought to question and probe more deeply, to look beyond the surface of whatever was presented to them.

> Kabbalists say that God is constantly creating the world through ten fundamental forces called the sefirot

Kabbalah, however, did not reach maturity until the 13th century and it was from this point on that the ideas truly spread, thanks to its switch from an oral tradition to one that was written. The most famous work of Kabbalah, the *Zohar*, emerged. Written in Aramaic, it was revealed by the Spanish Kabbalist Moses de León who claimed it was the work of Rabbi Shimon bar Yochai, a Jewish writer who lived in the second century. As with the Talmud – the texts of which included the ma'aseh merkabah and ma'eseh bereshit – it ended up standing alongside both the Talmud and the Torah as important pillars of the wisdom writing of the Children of Israel in Kabbalah tradition.

But what was it? The *Zohar* was a series of books that commented on the mystical aspects of the Torah, exploring the nature of God and the human soul as well as good, evil and sin. It looked at the structure of the universe and its origins and it became vitally important for students. The *Zohar* was also greatly significant for the Jews badly affected by the Alhambra Decree of 1492, which saw them forced to convert to Christianity or be expelled from the Kingdoms of Castile and Aragon on the orders of the joint Catholic monarchs of Spain.

Such was Kabbalah's intensity, however, that those seeking to understand had to be aged over 40 (this is due to the first major written collection of the Oral Torah, the Mishnah, speaking of 40 as being the best age for understanding [Ethics of the Fathers 5:24]). It was also preferable for students to be married, which again was seen as a sign of maturity and experience. There was a debate, too, over who actually wrote the *Zohar* with academics since claiming it to be the work of Rabbi Moses de León. Regardless, Judaism became a more inner experience for many.

Much of that was down to Jewish mystic Rabbi Isaac Luria who transformed the study before his death in 1572. Key to his interpretation was tzimtzum, the understanding that only God existed before the creation and that he began the process of creation by contracting his infinite light to make room for a finite, pluralistic world. This work was passed on thanks to Rabbi

Jewish Kabbalists read the Torah on four levels, looking at its literal meaning, what it implies, the lessons that can be learned and the secrets it contains

The Kabbalah Centre seeks to openly teach traditional Jewish Kabbalah today. It was founded by Philip Berg in 1965

German occult writer Heinrich Cornelius Agrippa

Ezekiel's Vision, by Italian painter Raphael

An ultra Orthodox Jewish man watches a bonfire during the holiday of Lag B'Omer

Chaim Vital (1542-1620), a Jewish scholar who studied alchemy and who had a vision that he was destined to become a Kabbalist, who put the teachings down in writing.

From that emerged the ten sefirot that made up the Kabbalah Tree of Life (that is, the spiritual attributes in which The Infinite God is revealed including primary will, wisdom, understanding, judgement, lovingkindness, might, beauty, glory, victory, connection, sovereignty and the Divine Presence). Such teachings were later adapted by occultists and Western Esoteric movements, with the Renaissance seeing Christian Kabbalah emerge thanks to a growing appetite for interpreting Christianity from a mystical point of view.

Christian Kabbalah reinterpreted the doctrine of Jewish Kabbalah by linking the atonement and resurrection of Jesus Christ to the ten sefirot. In the Christian Kabbalah's Tree of Life, the three topmost spheres became connected to the Trinity, the rest concerning themselves with Earth. Hermetic Qabalah then arose from a desire to find proof of Christian doctrine in Hebrew mysticism. It not only drew upon Kabbalah but also pagan religions, western astrology, Gnosticism, Neoplatonism, Tantra and alchemy. By combining different beliefs and thoughts, it promoted a syncretic world view.

Although Hermeticists saw Qabalah's origins in classical Greece rather than Jewish mysticism, Kabbalah found its way into Hermetic tradition from the 15th century. Heinrich Cornelius Agrippa wrote *Three Books of Occult Philosophy* which explored the beliefs of Western Esotericism. It looked at the subjects of ritual magic, spells, ceremonial procedures and Kabbalah, among others and approached them from the perspective of a scholar.

Hermetic Qabalah's emphasis was on the power of a magician to make ever-so-slight alterations in the higher realm, and the cards that made up the Major Arcana of the Tarot deck replaced the Tree of Life. Orphism and Egyptian mythology were added during the 17th century and its influence grew among non-Jewish scholars. They felt it could uncover hidden connections, since they believed anything would take the place of the ten spheres and 22 paths of the Tree of Life. It posits that the universe is best understood by numbers and so draws upon the work of Greek mathematician and philosopher Pythagoras.

Even so, Luria's initial influence continues to this day (and that's quite aside from Madonna writing a song called *Isaac* in 2005 which many believed was about him). The Kabbalah Centre, led by Rabbi Philip Berg, is the most influential centre of study and it is dedicated to bringing the wisdom of the religion to the world. Jewish Kabbalists continue to believe that they are able to repair the damage between the upper and lower worlds and that, by observing the commandments and the paths, Kabbalah is capable of leading people from spiritual exile to redemption.

> Kabbalists believe that our souls will greatly outlive our bodies and that we live in both the physical and spiritual worlds

Syncretism

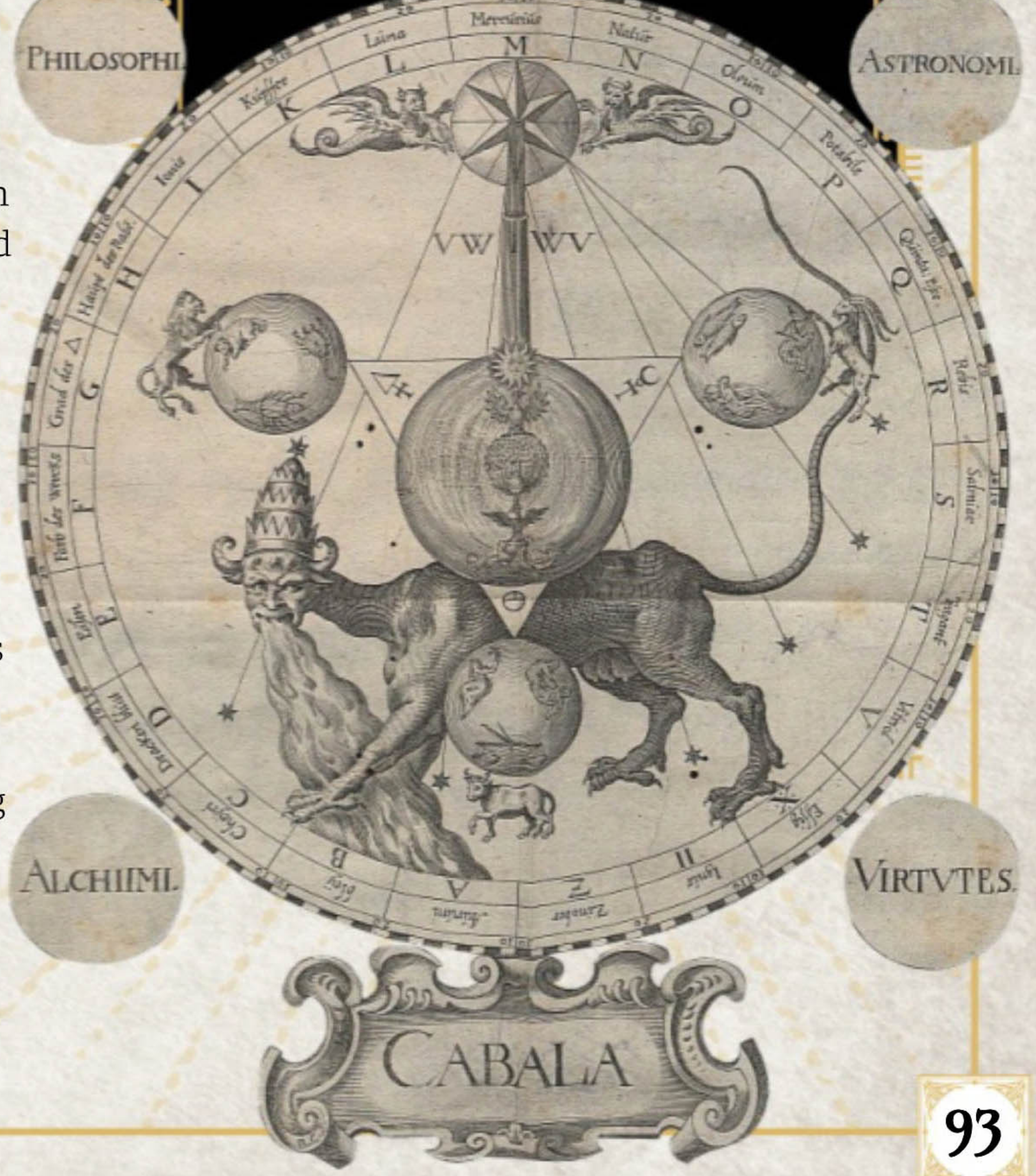
Hermetic Qabalah combined diverse beliefs and blended practices of various schools of thought. In sharing concepts with Jewish Kabbalah and drawing on alchemy, pagan religions, Western astrology, Gnosticism and more, it created a new system and was a prime example of what is termed religious syncretism.

Detractors, including Orthodox Christians, say syncretism relies not on the Scriptures but on the whim of humans, drawing on influences affecting a culture. They say it makes a religion illegitimate, but there's a compelling argument that all religions are syncretic to some degree: many pagan symbols, for example, were adopted by Christianity between the second and fourth centuries.

Indeed, the religion of Judaism has also arguably absorbed outside religious influences (Jewish fundamentalists, however, say it has not). Meanwhile, Giovanni Pico della Mirandola, an Italian Renaissance nobleman and philosopher, founded the tradition of Christian Kabbalah through a syncretic view of Kabbalah, Hermeticism, Aristotelianism, Platonism and Neoplatonism.

Other syncretistic movements include Gnosticism which blends aspects of various mystery religions, the dualistic religion founded in the third century, Manichaeism, and Sikhism, which draws on elements of Hinduism and Islam. Aside from religion, it should be noted that syncretism is also common in other expressions of culture, including literature and music.

The 17th-century printmaker Stephan Michelspacher published *Cabala, Spiegel der Kunst und Natur: in Alchymia* in 1615



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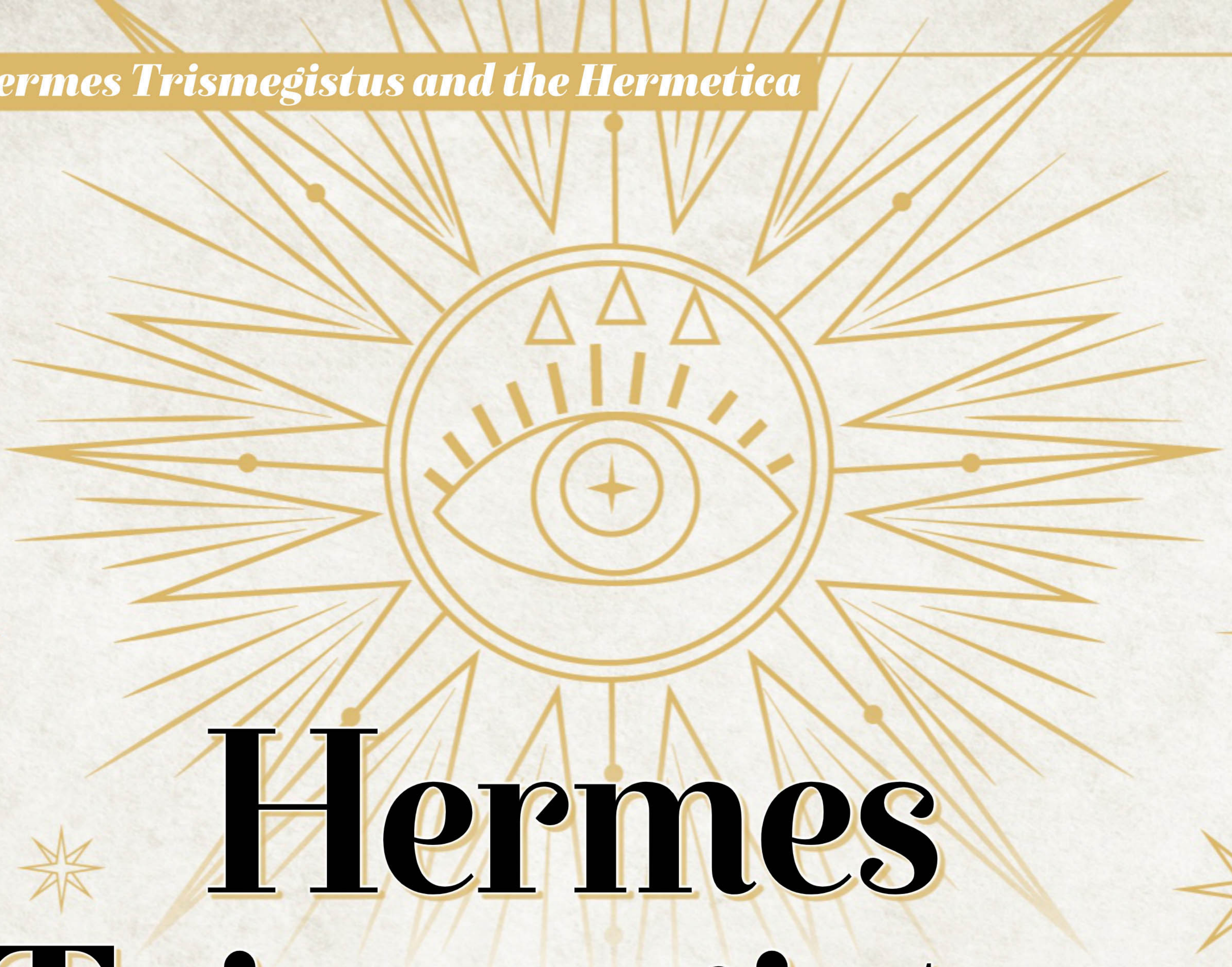
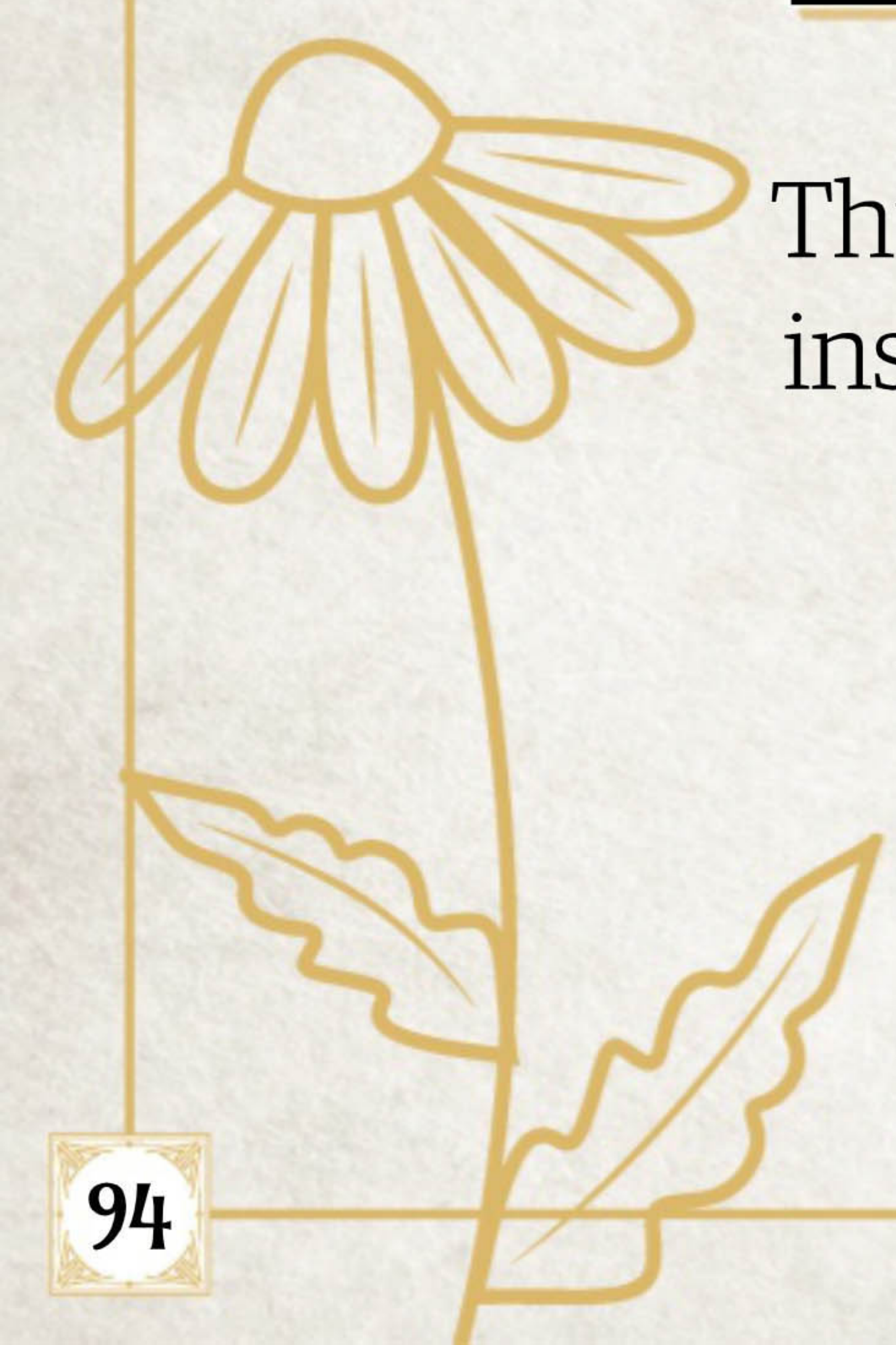


Hermes Trismegistus and the Hermetica

Through sharing his teachings, Hermes Trismegistus inspired generations of alchemists, philosophers and occultists in many different ways

Written by Poppy-Jay Palmer



Hermes Trismegistus and the Hermetica

The 2nd-century Egyptian-Greek wisdom texts known as the *Hermetica* went on to form the basis of the religious and philosophical tradition of Hermeticism

Hermes Trismegistus was seen as a contemporary of Moses and can be seen here in a mosaic in the Cathedral of Siena

It is believed that most of the 42 texts that make up the Hermetica were destroyed when the Great Library of Alexandria was torched

During the Renaissance, alchemists looked to a number of texts written by experts in their field for guidance, but none were as important as the *Hermetica*, a collection of Egyptian-Greek wisdom texts from the 2nd century CE written by Hermes Trismegistus. The texts were mostly composed as dialogues in which a teacher enlightens one of his disciples through discussions of the divine, the cosmos, mind and nature, touching upon alchemy, astrology and other related concepts. The *Hermetica*, or The Corpus Hermeticum, went on to form the basis of the religious, philosophical and esoteric tradition known as Hermeticism.

The texts that make up the *Hermetica* are just one part of a larger picture, remnants of a more extensive literature of the syncretic intellectualised paganism of the era, and they helped to spur on a cultural movement that included the Neoplatonic philosophy of the Graeco-Roman mysteries, among others. However, the texts were not concerned with Greek mythology, nor the details of metaphysical Neoplatonism. Instead, they were influenced by Judaism and refer to Genesis 1:28.

Though the texts were lost to Western culture during the Middle Ages, they were rediscovered during the Renaissance and, following a translation by Marsilio Ficino, enjoyed much popularity among alchemists as more and more people bought into the ideas that Hermes presented. Its teachings went on to influence philosophers like Giordano Bruno and Pico della Mirandola and had a profound impact on alchemy. Opposed by the Church, the teachings from the text became part of the occult underworld, resulting in Hermeticism being infused into occultism and gaining great influence in Western magical traditions.

In all, the Hermetic tradition attributes 42 books to Hermes, but most of these were reportedly destroyed when Egypt's Great Library of Alexandria was set ablaze during Julius Caesar's siege of the city. As a result, very little of the texts are easily accessible to non-specialists. However, some modern occultists believe that the texts that contain Hermes' religious beliefs and philosophies remain hidden somewhere in a secret library.

The Hermetic New Age revival has led to Hermes being associated with several wives and at least one son who took his name and passed it on for generations. It is also widely believed that his offspring pursued careers as priests in unknown religions, which partly explains how both the legend of the *Hermetica* and of Hermes himself have endured to the modern age despite the fact that the *Hermetica* could well have been destroyed long ago.

Images source: Getty, Wiki

Controversy and the occult

German-born Heinrich Cornelius Agrippa von Nettesheim was a controversial figure both in life and death, but who was the man behind the legends?

Written by Willow Winsham

Born in Cologne in 1486, Agrippa was a man of many interests and talents; soldier, theologian, physician and law expert being among the various roles he played throughout his life. He is best remembered, however, for his occult writings, alchemical ideas, and his seeming contradictions on the topics of magic and science.

Agrippa's interest in the occult is believed to have stemmed from his time at the University of Cologne, where he studied medicine and law, magic, sciences and theology at a young age. After his studies he spent time in Europe in the army of Maximilian I, and in 1509 he received the patronage of Margaret of Austria. Due to his authorship of *On the Nobility and Excellence of the Feminine Sex*, Agrippa has been hailed as an early feminist. This publication did his career little good, however; while teaching at the University of Dôle, Agrippa was denounced by Jean Catilinet, the superior for the Franciscans in Burgundy, and he left in 1510.

Agrippa pursued various careers, ranging from serving in Italy as a soldier to working as a physician and legal scholar.

After this, he did not remain long in one place, travelling throughout Europe. The 1520s saw him practising as a physician in Geneva, and he was personal physician to the queen mother, mother of Francis I of France, in 1524. During this time Agrippa also stayed in Pavia, Italy, where he explored hermetical ideas in both his writings and correspondence.

Agrippa's life and career were dogged with controversy, and he was plagued by debts and pursued by creditors. He was imprisoned several times for debts and his theological standpoints, although not, as is sometimes stated, for his occult beliefs. He also spoke out against the persecution of witches in 1520 and was forced to leave Cologne after rousing the wrath of the inquisition there.

His best-known work, *Three Books of Occult Philosophy*, was published between 1531 and 1533. This work styled itself as a defence of magic, utilising astrology, alchemy, Kabbalah and other mystical traditions to support his arguments regarding natural, celestial and ceremonial magic. Although often criticised for contradictions in later works, it is generally accepted that Agrippa did not fully renounce magic, as is sometimes suggested.

Agrippa died on 18 February 1535 in Grenoble, France, remaining Catholic in his beliefs until the end. Legend holds that, on his death, Agrippa's faithful hound jumped into the River Rhone. This led to the belief it was a demon, a myth that only served to help Agrippa's supernatural reputation grow and mutate long after his death.

"After his studies he spent time in Europe in the army of Maximilian I, and in 1509 he received the patronage of Margaret of Austria"

Robert Southey's 1799 poem, *Cornelius Agrippa: A Ballad*, references Agrippa's later reputation as a dark conjurer

HENRICUS CORNELIUS AGRIPPA Med. & I.C. EQUI.
Naſcitur Colon.
Agrip.
Obijt Anno 1538.

During his years of study Agrippa spent time in Paris, and it was said he was involved with a secret occult society in the city

Image source: Alamy

Images source: Alamy

Paracelsus

Dubbed 'the Luther of medicine', pioneering doctor and chemist Paracelsus was a hugely controversial figure in his short lifetime

Written by Martyn Conterio

Every so often, a person is born destined – as if by divine purpose – to change the world. Swiss chemist and occultist Philippus Aureolus Theophrastus Bombastus von Hohenheim (1493-1541), who became known across Europe and entered the annals of history as Doctor Paracelsus, was an absolute rock star of medicine. He took medical knowledge kicking and screaming into the Renaissance from the end days of the Middle Ages, all the while annoying just about everybody and making so many enemies he lived with an almost constant threat of physical harm and mortal danger.

Paracelsus was a bridge between the old world and new; a man whose achievements helped pave the way towards modern science as we know it today. Although far-reaching, he was still deeply religious and wished to understand nature through his own prism, which included a deep fascination with religion, alchemy, astrology and magic. Paracelsus firmly believed the mystery of nature was the mystery of God. An occultist, yes, but not the devil worshipper he was accused of being. Yet his prescriptions for ills involved astrological readings and concoctions born of magic, while his distinct hermetical beliefs rejected the doctrine of the Hippocratic system of the four humours. His career was all about understanding what he called 'lumen naturae' – the light of nature (the essence and building block of everything in the universe). From experience and studying nature, Paracelsus thought he could unlock the mysteries of the cosmos. As with many pioneers, he wasn't truly appreciated in his lifetime.

Paracelsus was far ahead of gatekeepers of useless knowledge, who clung to traditions and dusty old books. The fact that physicians left surgery to barber-surgeons appalled Paracelsus beyond words. He was not afraid of gore, entrails and getting his hands bloody. Throughout his career, he banished the idea that physicians

Images source: Getty

DEFINING MOMENT

University challenged

After leaving the Bergschule in Villach, Theophrastus undertook a tour of universities in Germany and Switzerland, intent on learning from the best of the best, but instead finding immense dissatisfaction. He wrote of his experiences, later in life, arrogantly pondering "how high colleges managed to produce so many high asses." Paracelsus was a blunt speaker with a fine line in snark.

1507

The iconic 16th-century portrait of Paracelsus by Flemish painter Quentin Matsys

“I have not been ashamed to learn from tramps, butchers and barbers”

The magic sword

Paracelsus sported a German-style longsword, to which he gave an occult name: Azoth (an alchemical term for a transformational element sought by occultists and magicians, and the name given to mercury). The sword would have been three to four feet long with a cross-guard and globular pommel. Rumour spread that he slept with it by his side and that it had a life of its own – it could dance a jig, clattering about the room making an ungodly clanging racket, waking up Paracelsus’s neighbours and leading to his reputation for belligerent and sinister behaviour. Why a learned man and doctor of medicine should walk around sporting such a cumbersome object on his belt has never been explained, though given his infamous bad temper and reputation for making enemies left, right and centre, he might well have used it for protection. It was fashionable for doctors of the period to wear daggers on their belts, but here Paracelsus upped the ante.

Another story spread about Azoth is directly associated with Paracelsus’s occultist reputation. It was said that inside the sword handle he kept his familiar, who would be released from Azoth to procure things for his master, such as gold coins, to pay for a night’s sleep at an inn.

Paracelsus and sword, Azoth, illustrated by 17th-century Dutch artist, Romeyn de Hooch

couldn’t touch the human body. He came to understand wounds kept clean would heal. Another reason Paracelsus incurred the wrath of traditionalists was his secretive notes, the way he jotted what today we’d call prescriptions or remedies, and his boastfulness that their feeble minds couldn’t possibly compete or understand his level of intelligence. His cure for dysentery reads: ‘Of Bloodstone, Of Red Corals, Of Spodium, Of Tanacetum, to the weight of all. Make trochisks with mucilage of the glue of botin. The dose is 3ss.’ Paracelsus’s chief – and lasting – claim to fame in chemistry and medicine is the invention of laudanum, or at least introducing it into European medicine for aiding surgery and recovery. He also devised liniments for the treatments of wounds in battle, having worked extensively in his early years as an army surgeon, along with using the metal mercury in the treatment of syphilis.

The tomb of Paracelsus, located in St Sebastian church, Salzburg

Paracelsus was, he felt, on a mission from God, and his constant exasperation with universities, apothecaries and quacks living in the past led to him being branded arrogant, a fool and possibly in league with Satan. Known for a belligerent manner, blunt speaking and egalitarian spirit, he once referred to himself as a “rough man from a rough country”. His lack of social skills, however, was more down to a superiority complex than it was a humble social standing. The son of a chemist with an association to minor nobility, Doctor Paracelsus became interested in alchemy as a child. Alchemists long searched for the secret of turning lead into gold and this intrigued young Theophrastus. Of course, such a thing is impossible, but the exposure to metallurgy and occultist beliefs boasted far-reaching implications for his career and development of chemical therapies for illness (such as using mercury and copper sulphate) as opposed to herbal ones.

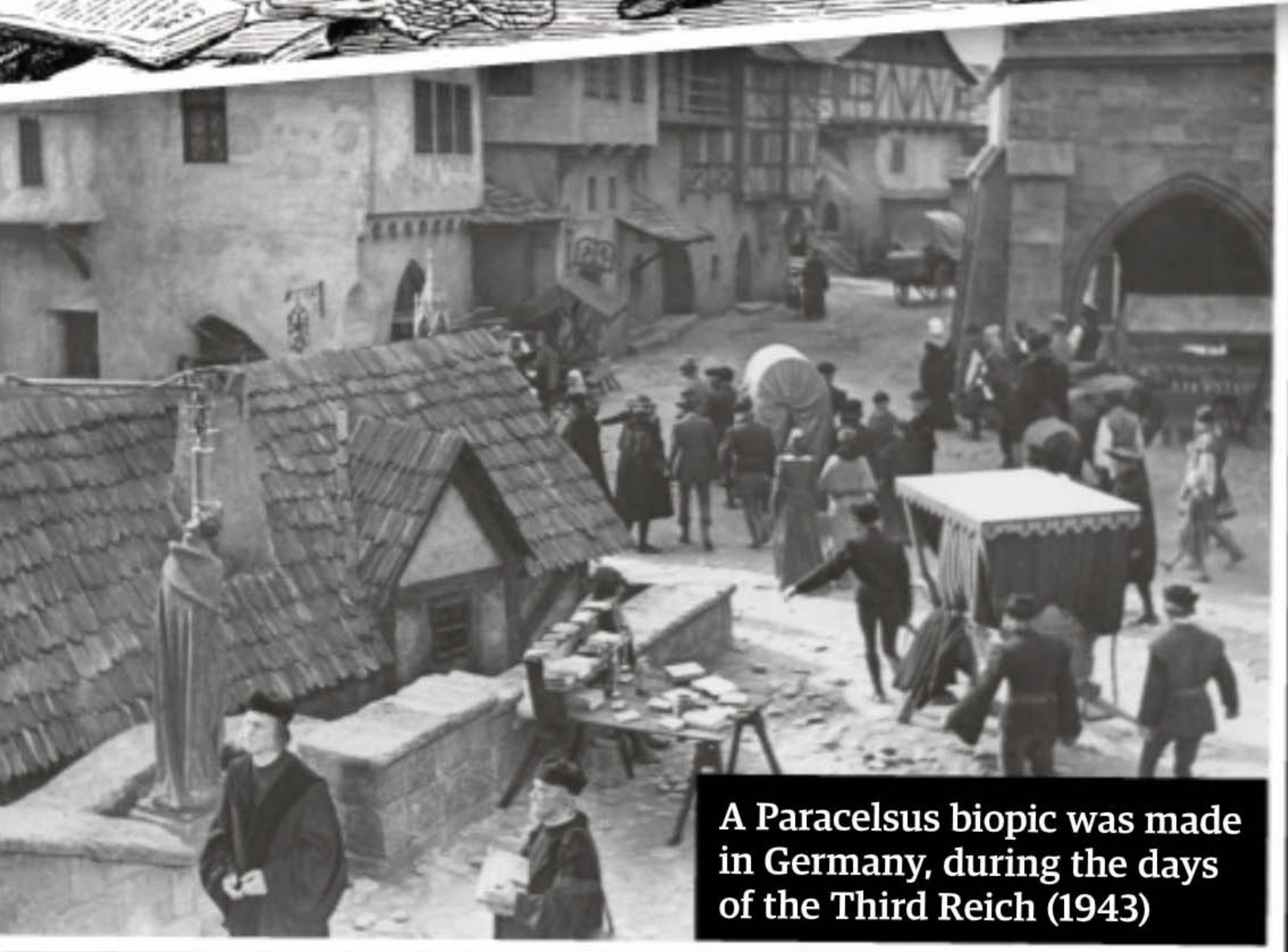
DEFINING MOMENT

Burning books

Paracelsus caused a general stink upon his appointment as Doctor of Medicine at University of Basel. He publicly burned the works of Greek physician Galen and Islamic scholar Avicenna. He also aroused suspicions and hostility by giving lectures in German, not Latin, and preferred wearing an alchemist’s leather apron to an academic’s gown.

24 June 1527

Opium-based laudanum became popular in the 19th century. Paracelsus is credited with its invention



A Paracelsus biopic was made in Germany, during the days of the Third Reich (1943)

Consumed by his work, he lived for chemistry and the study of disease, with no time for social niceties and courtesies. Paracelsus was so full of self-confidence, he thought nothing of screaming and shouting at aristocrats and royalty, especially when they fobbed him off without payment after treatment, thinking he was a diabolical mage rather than a pioneering medicine man. Paracelsus was by all accounts a grump, a grouch, and a man with zero interest in women. His life's desire was to break through the walls of convention and learning. While crusty dullards and dolts ignored evidence and advancements, Paracelsus relied on his rich life experiences and time spent abroad, as well as years as an army surgeon. He was more than willing to talk with vagrants as he was with fellow travellers in the field of alchemy. He made no distinction between classes, so long as he was gleaning valuable information from people. "I have not been ashamed to learn from tramps, butchers and barbers," he once wrote. His willingness to hang out with the lower born led authorities in Salzburg into throwing him out of the city, as they believed he was conspiring with – and encouraging – peasants to revolt.

DEFINING MOMENT

A mysterious end

Having moved to Salzburg under the auspices of Duke Ernst of Bavaria, Paracelsus fell mysteriously ill in the late summer of 1541 and died on 24 September at the White Horse Inn, having gathered the city's public notary and six witnesses on 21 September to read his will and testament. He gave instructions to be buried at Saint Sebastian's church.

24 Sept 1541

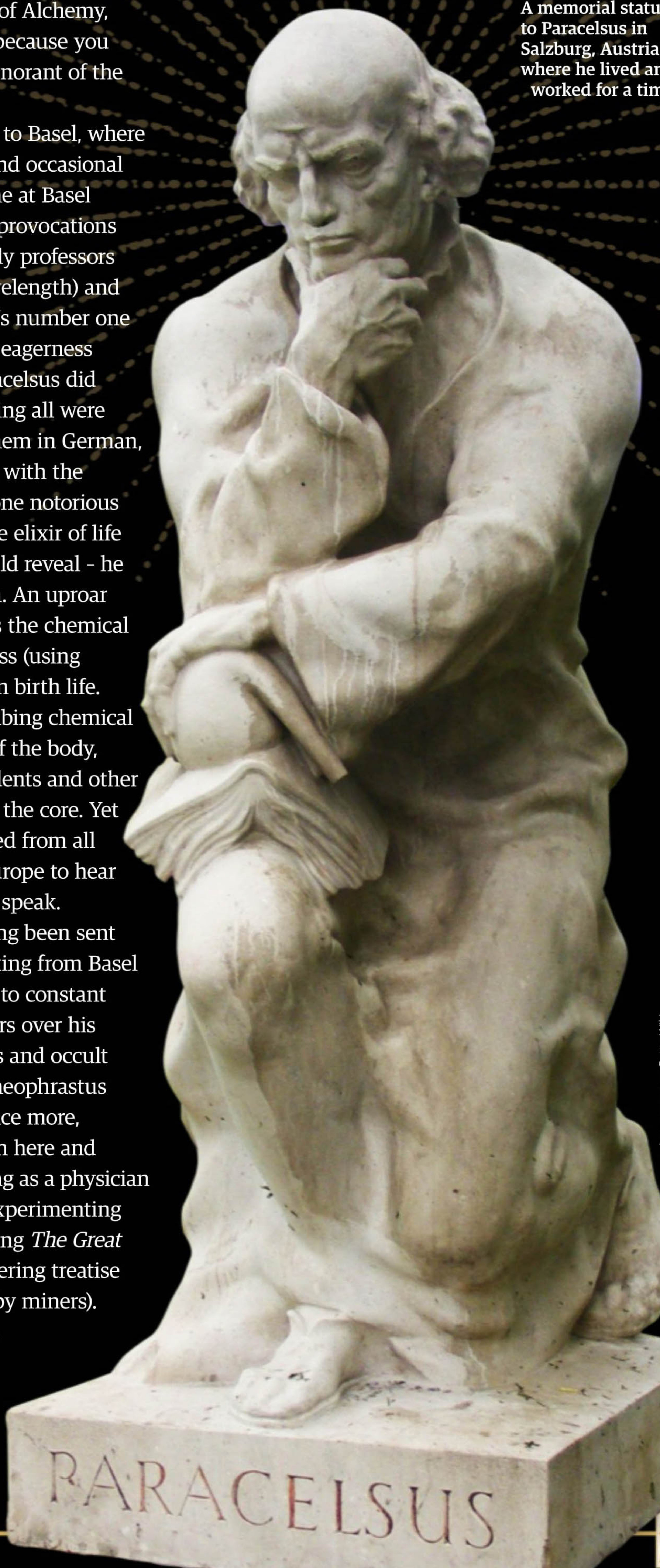
After picking up his doctorate from the University of Ferrara, Italy, Theophrastus embarked on a great peregrination. Parts of his travels entered conjecture, legend and myth, with some writers taking him as far as Arabia and Egypt. Others wrote how Paracelsus picked up arcane and esoteric knowledge from the Iberian Peninsula (though this chronology is disputed). What isn't disputed is that during this period, Theophrastus began to develop an intense loathing and dissatisfaction with thinkers of the time. "Because you are ignorant of Alchemy, you are ignorant of Nature: and because you are ignorant of Nature, you are ignorant of the Healing Art," he opined.

In 1526-27 Paracelsus returned to Basel, where he became the town physician and occasional lecturer at the university. His time at Basel was contentious, full of outrage, provocations against those he despised (namely professors and other doctors not on his wavelength) and cemented his status as medicine's number one agent provocateur. As part of his eagerness to learn, one of the first things Paracelsus did was put up a notice in town declaring all were welcome at his lectures. He gave them in German, not in the standard Latin, breaking with the elitist orthodoxy of the period. In one notorious incident, he advertised a talk on the elixir of life (an alchemist's obsession) and would reveal – he declared – the source of all creation. An uproar occurred when he began to discuss the chemical processes in the putrefaction process (using dung) to show how excrement can birth life.

His use of chemistry, and ascribing chemical processes to the wonders of the body, shocked students and other professors to the core. Yet people flocked from all corners of Europe to hear Paracelsus speak.

Having been sent packing from Basel due to constant uproars over his teachings and occult activities, Theophrastus wandered once more, settling down here and there, working as a physician by day and experimenting and writing by night (including *The Great Surgery Book*, 1536, and a pioneering treatise on illnesses and diseases suffered by miners).

In his lifetime, Paracelsus was as mocked and ridiculed as he was celebrated. The name 'Paracelsus' was probably given to him by others – maybe his students and admirers – and he never used it in writing (his extant works show this). Paracelsus references the 1st century Roman physician, Celsus, with the added 'para' – meaning beyond – demonstrating his superiority. There is also the theory the name was coined by one of Theophrastus' enemies. It didn't work, as Paracelsus had such a ring to it, any negative association was dissipated in the years after, when a small cult developed around his teachings in the 17th century.



A memorial statue to Paracelsus in Salzburg, Austria, where he lived and worked for a time

Images source: Getty, Wiki

Vnda lauat: pyr pur gat: Spiritus
fiat
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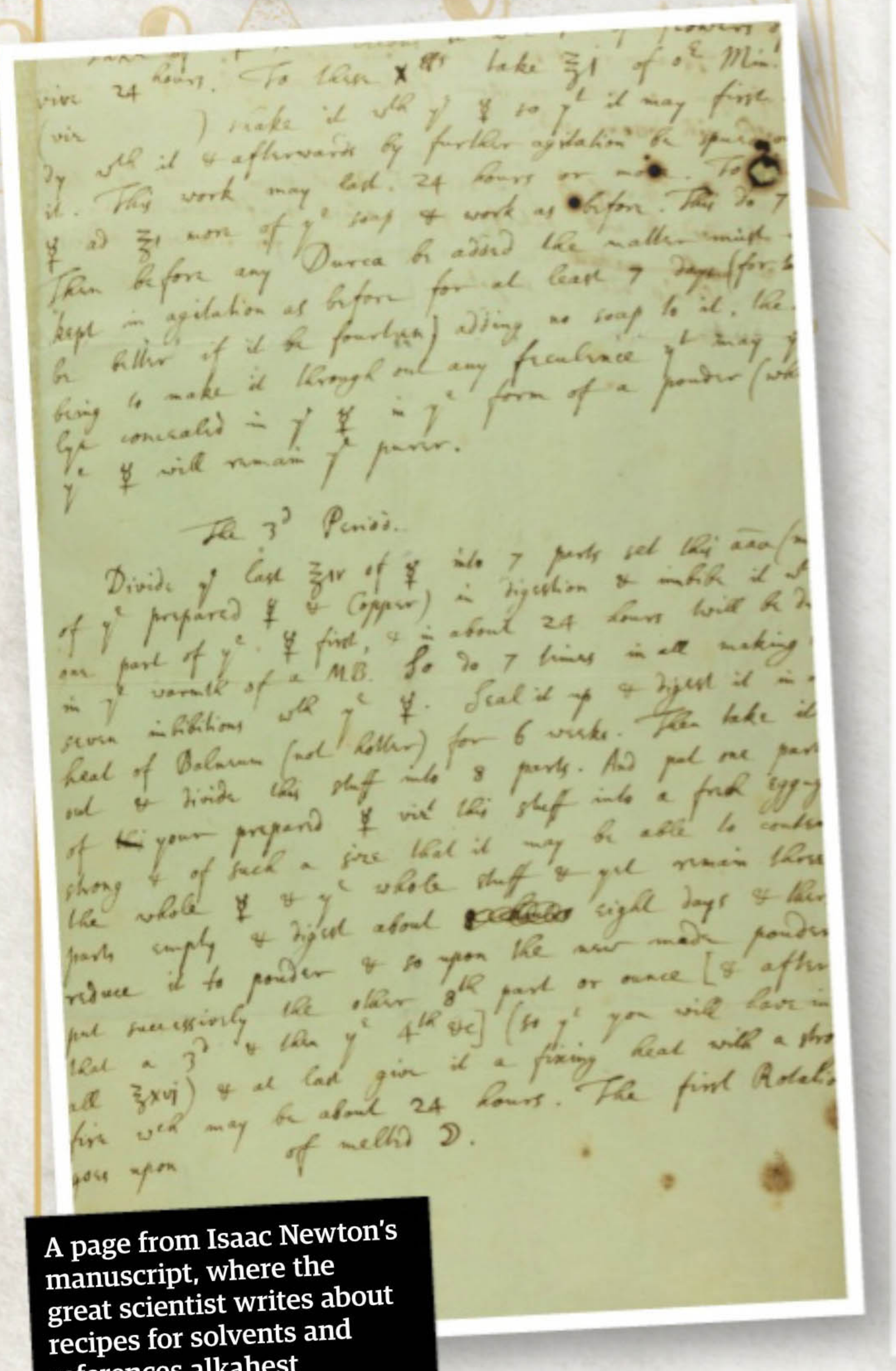
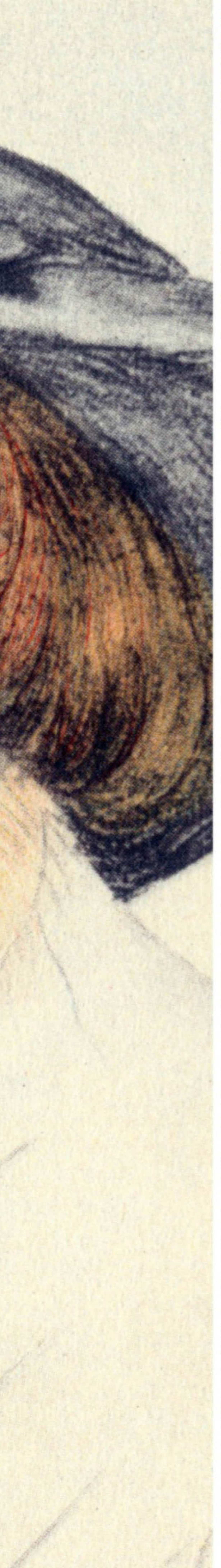
A 16th-century alchemical manuscript laying out the processes for creating the Philosopher's Stone, believed by Paracelsus to be alkahest



A page from Isaac Newton's manuscript, where the great scientist writes about recipes for solvents and references alkahest

A portrait of Paracelsus, who coined the term 'alkahest', drawn by the famous artist Hans Holbein the Younger



Images source: Wiki; Alamy

Alkahest

The semi-mythical solvent Paracelsus believed to be the culmination of the practice of alchemy

Written by Paul Walker-Emig

The concept of the substance known within alchemy as alkahest is usually attributed to the 16th-century alchemist Paracelsus, born in Switzerland as Philipus Aureolus Theophrastus Bombastus von Hohenheom. This idea was built on the work of alchemists that came before him, who placed a lot of focus on breaking down metals and other substances in the search for the elusive Philosopher's Stone - the, obscure, mythical knowledge that they believed to be the key to transmutation, or the ability to turn common metals to gold.

For Paracelsus, alkahest was the name of the substance key to that process. It was the name he gave to a solvent capable of dissolving any substance with which it came into contact. This, of course, begs the inevitable question as to how alkahest could ever be contained? Alchemists such as George Starkey (also known by the pseudonym Eirenaeus Philalethes) answered this by clarifying that the substance would, in fact, only dissolve compounds into their constituent parts. An alloy composed of copper and gold, for example, would be dissolved into pure copper and pure gold.

Rather than seeing alkahest as a means for discovering the Philosopher's Stone, Paracelsus believed that it was this substance itself that was the Stone, the secret of which alchemists had been searching for so long. This resonated with long-held ideas that the Philosopher's Stone represented the 'first matter', from which every other element derived. It would seem to make sense that this matter, which had the ability to create, also had the capacity to destroy, or at least cleanse matter into its purest form.

It's worth nothing that while alkahest was often talked about as a theoretical or hypothetical substance, the likes of Paracelsus went as far as penning a recipe for its creation. Caustic lime (calcium oxide), alcohol and carbonate of potash (potassium carbonate) were the ingredients to create his version of the solvent.

> Paracelsus is said to have been inspired by Arabic words including 'alkali' when he invented the word 'alkahest'

Paracelsus believed that alkahest also had medicinal properties, advocating adding a small amount to wine as a means to heal illness or perhaps even extend life.

The 17th-century Flemish alchemist Franciscus Mercurius van Helmont was a later advocate of alkahest and the work of Paracelsus. He too was concerned with the dissolution of materials into their constituent parts, viewing alkahest as a vital tool that, in his view, did indeed have the power to reduce any material into its prime matter.

The Magnum Opus

If you look closely, the stages involved in the Great Work of transmutation also double as an allegory for spiritual transformation…

Written by Poppy-Jay Palmer

The Philosopher's Stone may be the stuff of legend, but like all alchemical substances it has an origin. The Great Work, or Magnum Opus in the original Latin, is a term used within the tradition for the process of working with the first matter, or prima materia, to create the Stone. The term has long been attached to laboratory processes and chemical colour changes within alchemy, but through being carried forward in New Age and neo-Hermetic movements it has also gained a great deal of symbolism and spiritual significance.

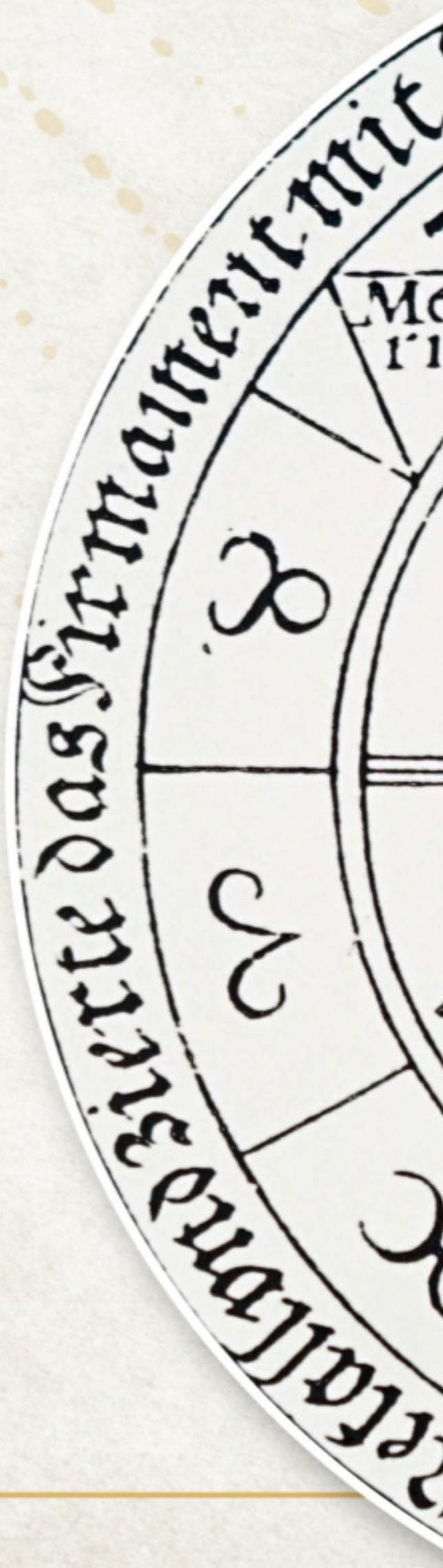
As well as describing physical transmutation processes, the Magnum Opus can also be interpreted as an allegory for spiritual transformation. It is often used as a model for the principle for individuation, the philosophy that expresses the idea of how a thing is identified as an individual thing that is not something else, and how individual people are held to be distinct from other people and elements in the world around them.

The original philosophy of the Magnum Opus was made up of four stages, and its origins can be traced back to as far as the 1st century: nigredo, a blackening or melanosis; albedo, a whitening or leucosis; citrinitas, a yellowing or xanthosis; and rubedo, a reddening, purpling or iosis. As time has passed, the stages have been both narrowed and widened. Following the 15th century, many alchemists and philosophers began to compress the citrinitas and rubedo stages into one, while others added a fifth stage, caudal pavonis, which translates to 'peacock's tail', to describe transmutations that feature an array of colours.

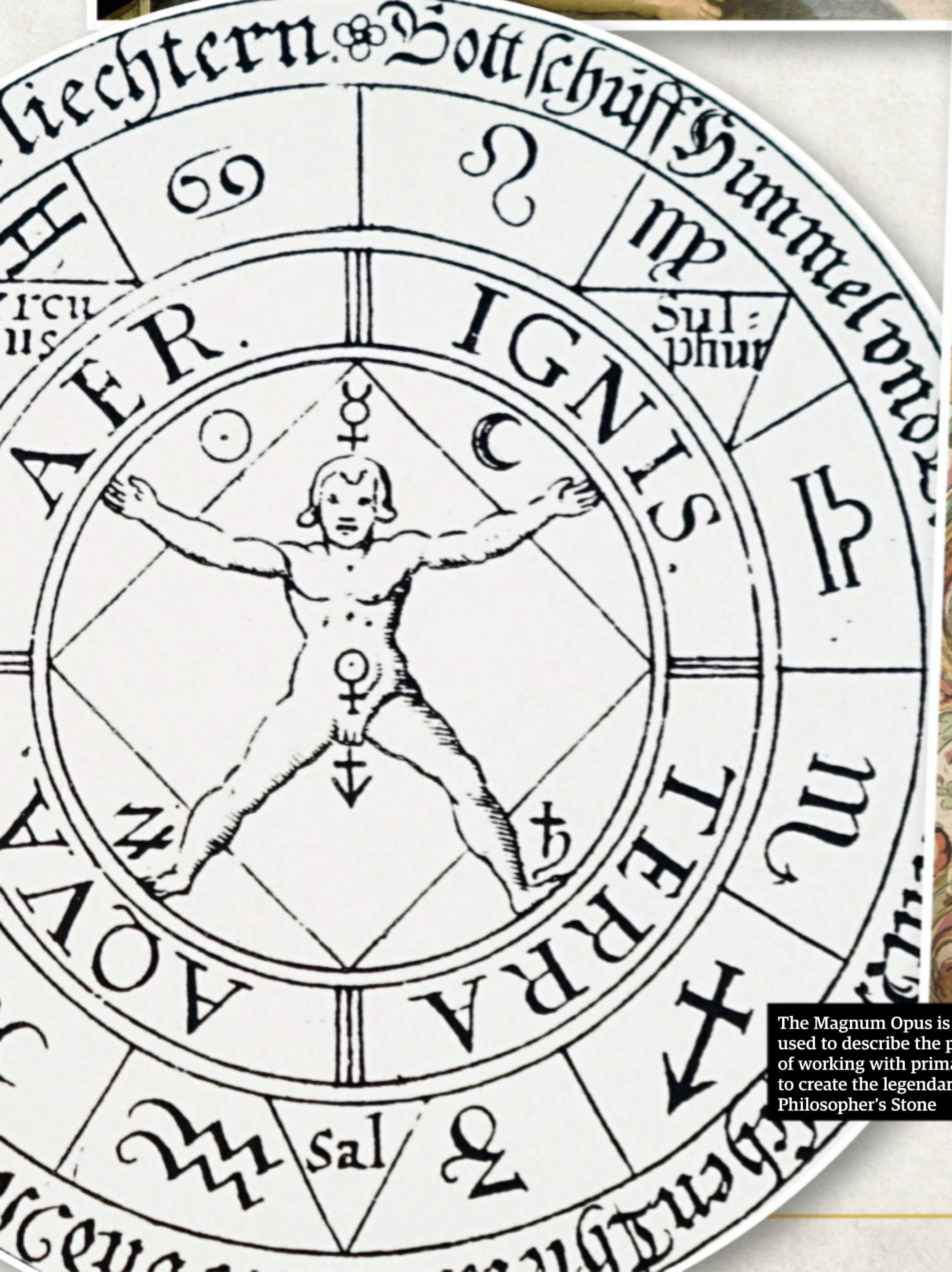
Seemingly wanting to make the Magnum Opus even more complicated, some alchemical authors expanded the simple colour model by enumerating a variety of chemical steps, like the 'recipe' presented by the famed Emerald Tablet. However, steps among different alchemists were rarely consistent, and each used different documents to justify the stages. George Ripley, one of England's most famous alchemists in the 16th century, included 12 different gates in his work: calcination, solution (or dissolution), separation, conjunction, putrefaction, congelation, cibation, sublimation, fermentation, exaltation, multiplication and projection. English country gentleman and alchemist Samuel Norton went a few further, including 14 stages.

The idea of a Magnum Opus has influenced more than just alchemists. Even today, the term is regularly used to describe a masterpiece in art, literature, the culinary arts and beyond, like Michelangelo's *The Creation Of Adam* or Charles Dickens' *David Copperfield*.

Symbols used to represent the Magnum Opus in alchemy include ravens, swans and phoenixes



The term 'magnus opus' is now used to describe any great work within a specified field, such as art or literature. Michelangelo's *The Creation Of Adam* is an example



The Magnum Opus is a term used to describe the process of working with prima materia to create the legendary Philosopher's Stone

English Augustinian canon and alchemist George Ripley included 12 different stages in his 15th-century work

Images source: Getty, Wiki

John Dee

Occultist, mathematician, philosopher or spy: what lurked beneath the man who spanned the gap between magic and science?

Written by Willow Winsham

The London-born John Dee was actually of Welsh descent, his family having made a place for themselves in the capital after the accession of a fellow Welshman, Henry VII, to the English throne. Over the years, the young and ambitious Dee invented a lineage that was far grander than his true humble beginnings, claiming a family connection with various Welsh princes, and even suggesting descent from the fabled King Arthur himself.

Dee gained his Bachelor's degree in 1545 from Cambridge. During his time at university, he had his first brush with the occult, in the form of alchemical studies, and came across the mathematical concepts that would become the basis of many of his later ideas. By the time he left university for good, he had already established something of a reputation in this area, though this did not stop him from taking Holy Orders in 1554.

Trouble erupted in 1555 when Dee was engaged by Queen Mary Tudor to use his already established skills to see what lay in store for herself and her half-sister, Princess Elizabeth. He found himself in hot water when on 28 May, he and his associates were arrested on suspicion of magic, a charge that rapidly escalated in the volatile political climate of the time to that of conjuring and witchcraft. Despite the potentially fatal situation, Dee was eventually cleared of all charges, and emerged as household chaplain to Edmund Bonner, Bishop of London.

Upon the accession of Elizabeth I in 1558, Dee's fortunes appeared to be improving. The new monarch was said to have chosen her coronation date based on a horoscope that Dee had cast for her and he was generally held in favour by the Queen. Despite this seemingly auspicious start and the connection he had with Elizabeth throughout his life, Dee had a fluctuating career and he never achieved the level of patronage and recognition that he felt was his due.

By the 1560s, the mystically inclined Dee had fully embraced the occult and arcane, and in 1564 he produced a work titled *The Hieroglyphic Monad*, exploring the meaning of a glyph that he himself had created. Ever hopeful, he dedicated the decidedly dense text to Holy Roman Emperor Maximilian II, though again it did not bring the rewards Dee had hoped for. More success came from his attempts to have references to himself as a conjuror removed from Foxe's highly popular work, *Acts And Monuments*: the critical comments were removed from later editions of the text, though his reputation in the wider world could

Image source: Alamy

> "Dee had a fluctuating career and he never achieved the level of patronage that he felt was his due"

DEFINING MOMENT

Arrested for sorcery

In the politically perilous times when the succession was far from certain, Dee found himself imprisoned for magical dabbling that could be interpreted as treason when he created horoscopes for Queen Mary I, her husband Philip of Spain and Princess Elizabeth. Torture was authorised to be used against him, though it is unclear whether Dee was actually subjected to the rack.

1555

Dee's relationship with Elizabeth I attracted much attention, but never brought Dee the recognition he craved

DEFINING MOMENT

Writing of The Hieroglyphic Monad

Dee produced many works throughout his life, covering mathematics, philosophy and the occult, but it was this work, written in 12 days, that was considered most important by his contemporaries and continues to intrigue and confuse readers today. This work is taken as evidence of the link between Dee and Rosicrucian ideas.

1564

not be changed quite so easily.

Dee was also vociferous in his support of English expansion in the New World, and he devoted much time and effort to this cause, attempting to boost England's claims over those of Spain in the continuing battle for supremacy over the territory. In 1577 he published *General And Rare Memorials Pertaining To The Perfect Art Of Navigation*, outlining his ambitious ideas regarding England's developing empire. As was the case with so many of his visions, however, the majority of his ideas in this area were not adopted.

A great lover of books, Dee turned his attentions to developing a private library in his Mortlake home. He expanded it into a great wonder, including many texts of an occult nature, and it was known as one of the leading libraries in Europe and the largest personally owned library in England during his lifetime. Dee's great fascination of the occult coupled with a burning desire for greater recognition was again made clear in 1574, when Dee wrote to William Cecil, Lord Treasurer to Elizabeth I. Dee apparently claimed to have knowledge of hidden treasure in the Welsh Marches, hinting at his ability to recover it… for the right patron, that is.

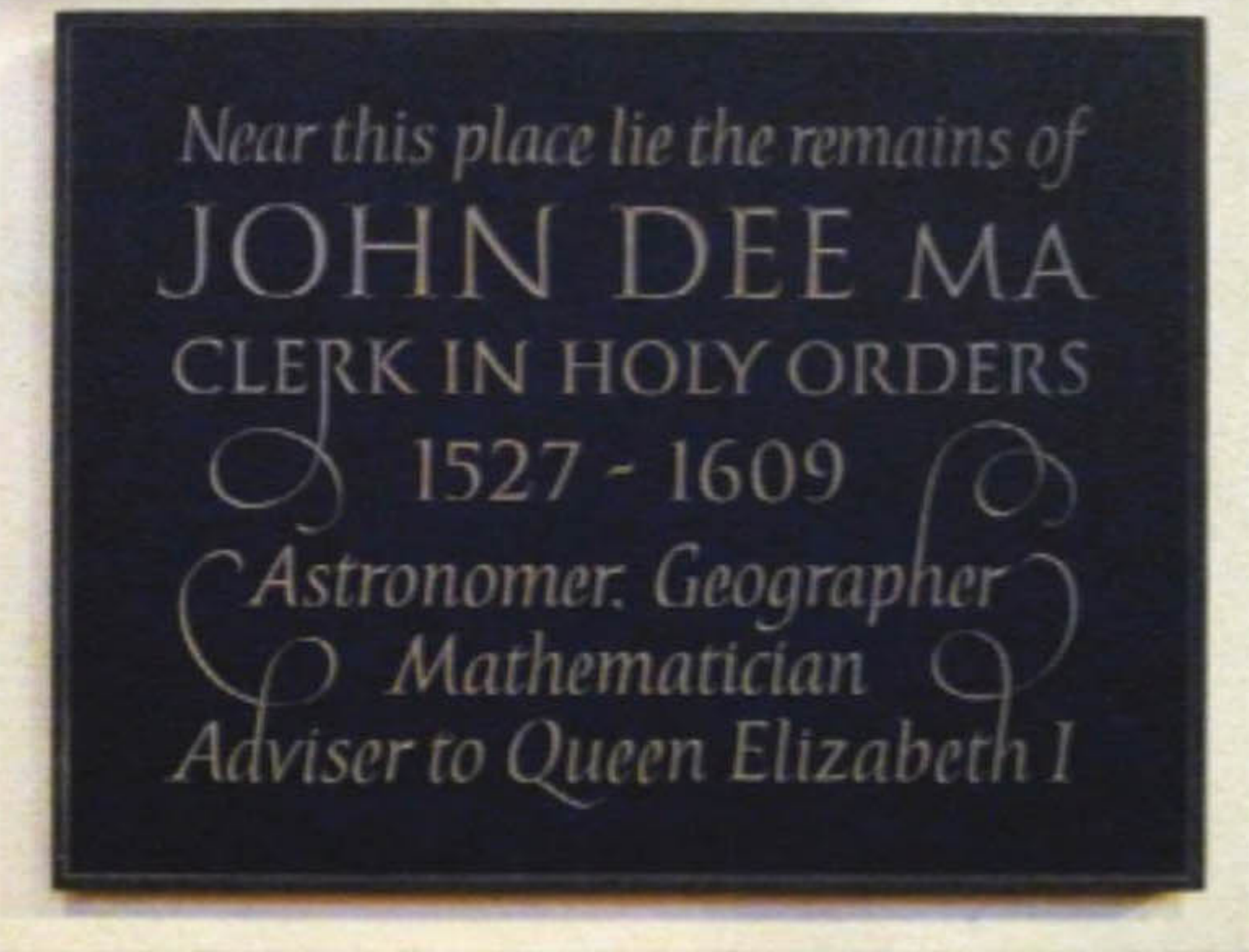
The 1580s saw Dee into his fifties and signalled a change of direction, as he finally acknowledged his disappointment about his lack of advancement. As such, Dee switched his attentions even more fully towards the occult, and it was now that he devoted himself to communicating with spirits and angels. For this work he required a partner skilled in the art of crystal gazing to act as go-between for the two worlds and, after impressing him at an audition, Dee finally settled on the unlikely choice of convicted criminal Edward Kelley.

Their attempts were deemed successful, and Dee fully believed that, through Kelley, they had made contact with angels. These communications were meticulously recorded by Dee. Despite his links with the occult, he was a devout Christian, and prayer and fasting played a large role in his spiritual communications. His motives were also not, arguably, entirely selfish – he believed, apparently wholeheartedly, that what he was learning through Kelley and the angels would be profitable to the entire human race.

Kelley was not the only questionable individual to whom Dee was drawn in his lifetime; it was during this decade that Dee, at the behest of Albert Leski, a Polish nobleman, was induced to uproot his family, along with Kelley, and move to Poland. The whole situation soon fell apart, as it transpired

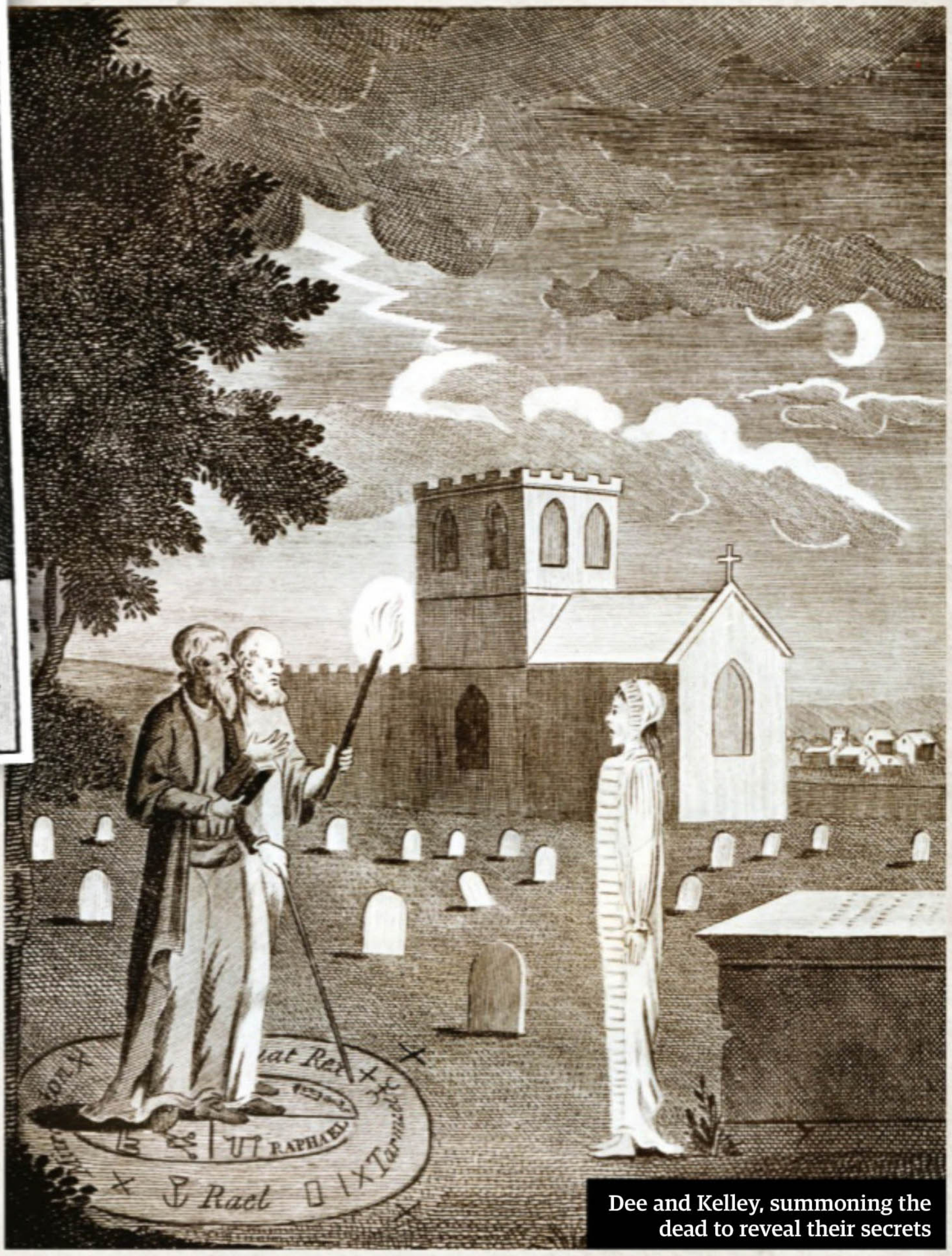
> "He believed… that what he was learning through Kelley and the angels would be profitable to the entire human race"

Dee's name has been inextricably linked to the occult in the centuries since his death



Near this place lie the remains of
JOHN DEE MA
CLERK IN HOLY ORDERS
1527 - 1609
Astronomer. Geographer
Mathematician
Adviser to Queen Elizabeth I

A memorial plaque for Dee, hung inside St Mary the Virgin Mortlake in 2013



Dee and Kelley, summoning the dead to reveal their secrets

that Leski didn't have a penny to his name and was even further from favour at his native court than Dee felt at his own. Instead of returning home however, Dee, with the ever-present Kelley and their families, embarked upon a tour of Europe. They continued their angelic communications (indeed it had been the angels that told them, according to Kelley, to go to Poland with Leski in the first place). The pair attempted to interest some great names in their work with angels, holding an audience with Emperor Rudolf II and King Stefan Báthory of Poland. Even here Dee lost out; while he focused on angelic communication, Kelley's skill at alchemy saw his eventual appointment as chief alchemist to the Emperor.

It was this time in Europe that helped promote Dee's lingering reputation as a spy in the pay of Elizabeth I. Despite being greatly respected for his intellectual abilities, there was an ever-present suspicion from the monarchs he approached.

As the decade neared an end, relations between Kelley and Dee began to deteriorate. This was not helped by the younger man – Kelley was nearly 30 years Dee's junior – announcing that one of their angel communicators had declared that the men must share everything in common – including, much to Dee's consternation – their wives. Although it appears that this arrangement was entered into, Dee and Kelley parted company not long afterwards – though there continues to be some dispute as to the parentage of the child born nine months later to Dee's third wife.

His long absence from home had serious consequences. The house at Mortlake was in a sorry state due to vandalism, and his precious library had been ransacked. The political and religious environment to which he returned was also not very welcoming, the tide having turned against the occult beliefs that Dee held so dear and leaving him with even less hope of gaining favour. Despite this he was granted the role of warden at Christ's College, Manchester in 1595, but the 68-year-old Dee didn't manage to properly benefit even here as he was not held in any great respect by those he kept watch over. He also came under fire for his involvement with the exorcist craze that gripped the capital around that time, and for his apparent connection to disgraced Puritan exorcist John Darrell, as well as claims of fraudulent possession. All of this meant that any hopes of further promotion or advancement were completely dashed by the end of the affair.

Rumours still persist to this day, but it is highly unlikely that Dee was a member of the Rosicrucian Order, and in fact there is no hard evidence that the Order even existed during Dee's lifetime.

Dee fared little better when James I followed Elizabeth on the throne, and the new monarch was not interested in supporting the famed occultist. Dee went on to live out his years in poverty, selling the remnants of his possessions to make ends meet, and died in c.1609 at Mortlake, under the care of his daughter Katherine.

DEFINING MOMENT

Meeting Edward Kelley

Dee's relationship with Kelley defined a large portion of his life, the younger man facilitating Dee's desire to explore angelic communication and leading him deeper into the world of the occult. Several texts were 'dictated' by the angels through Kelley and faithfully recorded by Dee, which provided valuable insights into their work together.

1582

Images source: Wiki, Alamy, Thinkstock

An alchemist's laboratory

A sanctuary for seekers of the Philosopher's Stone

16th-17th century

Europe

Few scientific disciplines defined the complexity of the Renaissance as much as alchemy, an area where philosophy, science, theology and magic came together. The tradition dates back to Hellenistic Egypt, where ancient alchemists attempted to create artificial gemstones and turn base metals into gold and silver. By the Middle Ages, the practice had spread to Europe, where theologians encouraged its reconciliation with Christianity. It was believed that minerals and other substances could affect the human body - if the secret of purifying gold could be learned, then the technique could be used to purify the soul and gain entry to Heaven.

With the birth of the Renaissance, alchemy became an entrepreneurial pursuit, with many receiving large payouts from the nobility for their medical services, the production of precious metals, and, of course, the 'elixir of life'. Fraudsters began to cash in on the craze, using magicians' tricks and misdirection to 'create' gold in order to attract sponsorship and court favour. Those who were exposed were imprisoned, tortured or executed, and some were punished for witchcraft and devil worshipping in particularly gruesome ways.

But it wasn't just the alchemists themselves who suffered from their science. Customers seeking cures for their ailments were often treated with metals like mercury and lead, with fatal outcomes.

Chemicals

Alchemists regularly used mercury, sulphur, bile, potable gold, vinegar and salt to dissolve, separate, purify and recombine chemicals. The use of elements like mercury in medicines often proved fatal.

© Adrian Mann

Oratory

Before beginning any new experiment, it was important that the alchemist sought the approval and assistance of God, who they believed held the secret to the elixir of life. Theology and science became deeply intertwined during the Renaissance.

Athanor

Once filled with coal, this furnace could run for a long period of time without any supervision, allowing alchemists to carry out lengthy transformations that could take up to 40 weeks. At a time when many were persecuted, it also enabled them to perform alchemical experiments inconspicuously.

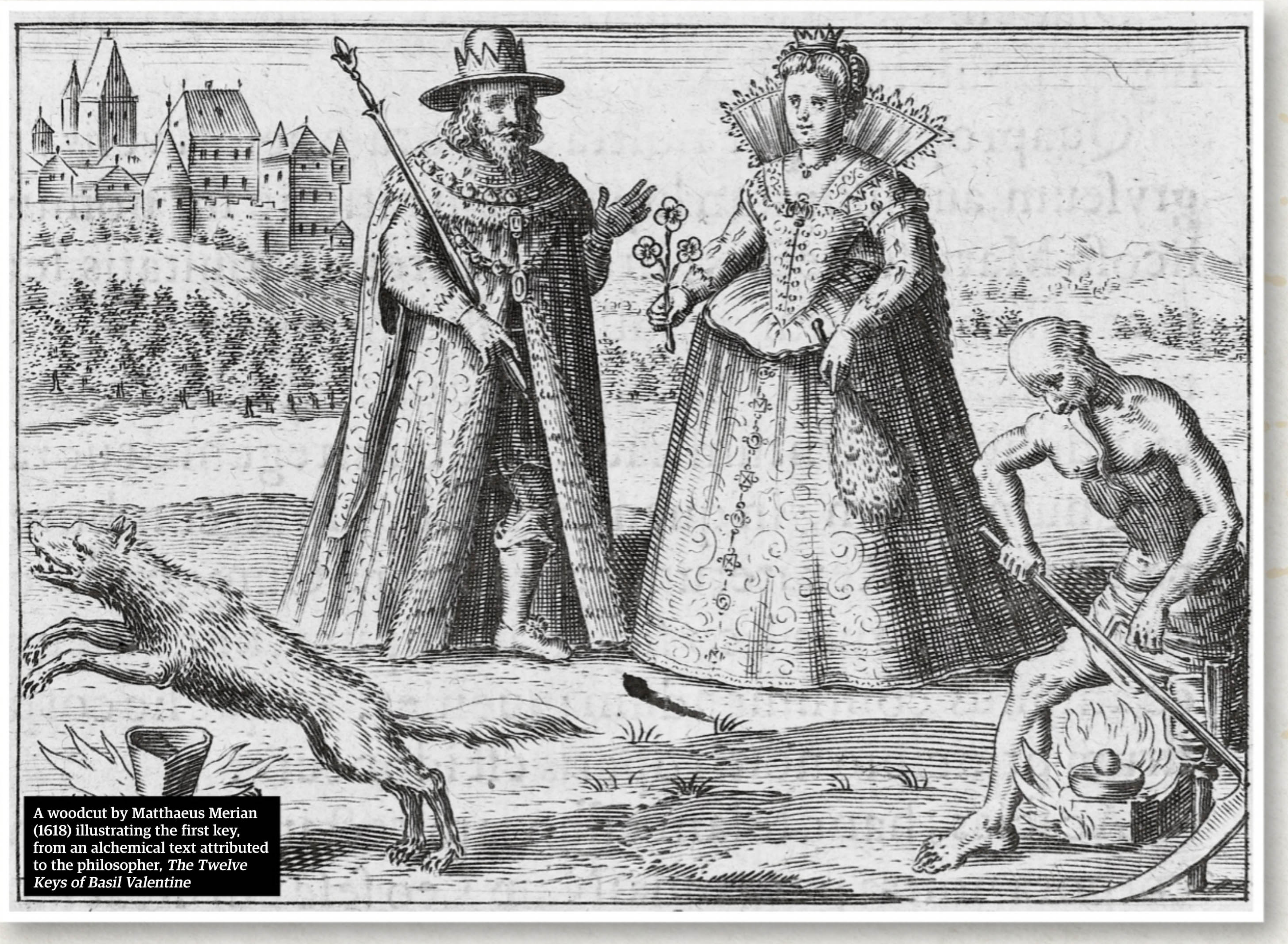
Musical table

Music was sacred to alchemists. It was believed to prevent negative thoughts and protect against evil spirits that threatened to impinge on their work. Alchemists also believed that the vibrations produced by musical instruments could cause chemical changes.

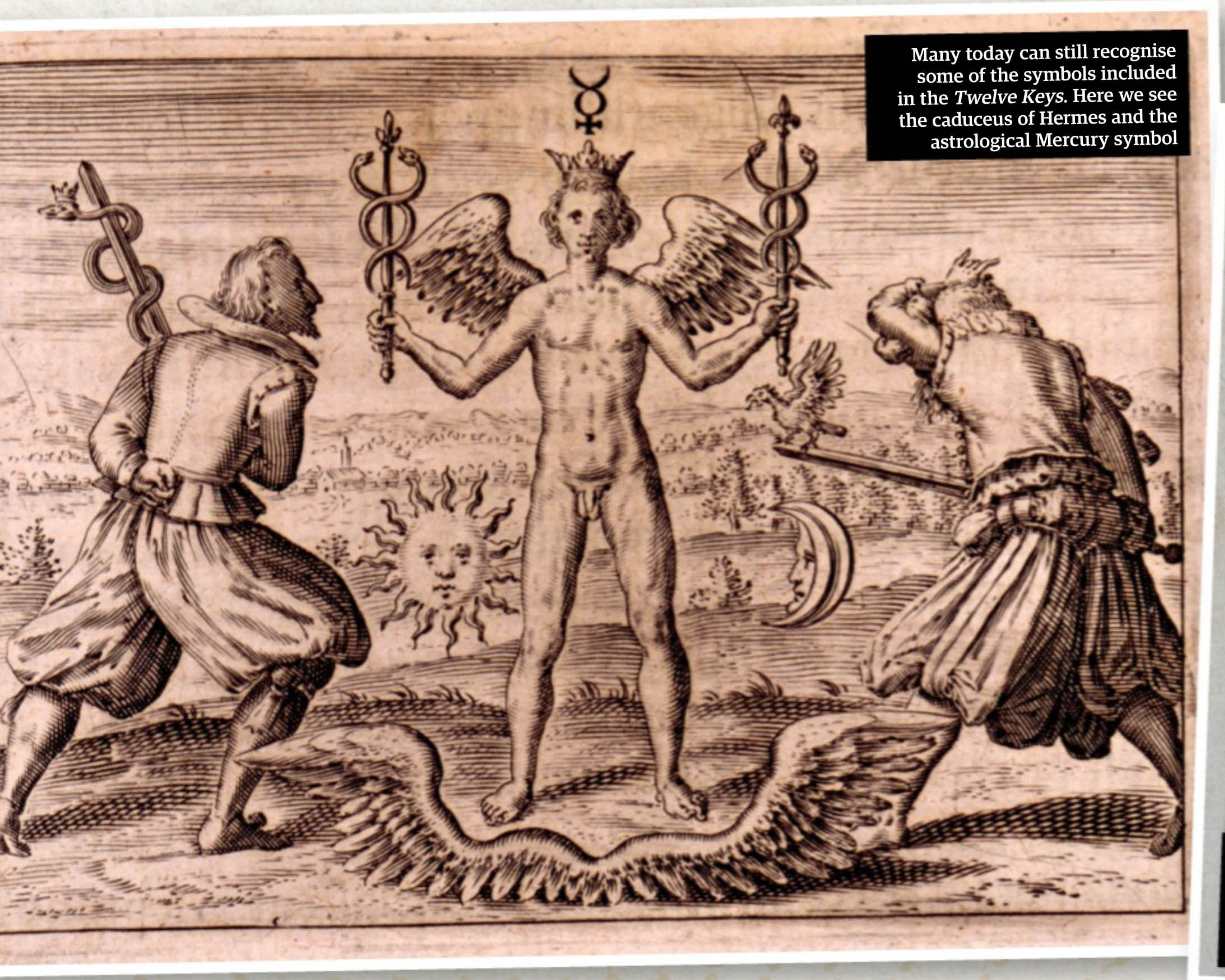
Basil Valentine: Monk and alchemist

Whether a man or a myth, many today still believe that the works attributed to Basil Valentine enshrine the secrets of the Philosopher's Stone

Written by Dee Dee Chainey



A woodcut by Matthaeus Merian (1618) illustrating the first key, from an alchemical text attributed to the philosopher, *The Twelve Keys of Basil Valentine*



Many today can still recognise some of the symbols included in the *Twelve Keys*. Here we see the caduceus of Hermes and the astrological Mercury symbol

MONACHVS ET PHILOSOPHVS HERMETICVS FRATER BASILIVS VALENTINVS BENEDICTINI ORDINIS

Many later scientists and philosophers have studied the works of Basil Valentine, including Isaac Newton according to some sources

Basil Valentine, or Basilius Valentinus, as he was originally known before the name was anglicised, is a murky figure shrouded in mystery. Like many esoteric authors, it remains unknown whether he was indeed a man in his own right, or if his name was merely a pseudonym for a collection of authors from a later date, with the name being added long after the writings themselves came into being.

Nevertheless, the figure has gone down in history as one of the most famous Hermetic philosophers of 15th-century Germany, while some argue for a 17th-century date. Many have speculated about his identity. Some suggest he might have been Canon of the Benedictine Priory of Saint Peter in Erfurt, Germany. Others argue that this name was never mentioned prior to the year 1600.

Today, many believe that the author of works attributed to Valentine was in fact a Thuringian salt manufacturer named Johann Thölde who lived at the turn of the 17th century. Indeed, this theory is more believable when considering that a knowledge of mining, metals and chemistry is evident in these texts, and Thölde himself wrote a complex volume on salt extraction in his own right entitled *Haligraphia*. Many now believe that Thölde was indeed an author of the works of Basil Valentine, attributing the first five of his books to him, yet he was only one of many that used the name.

Valentine knew his science, providing explanations of how to make hydrochloric and sulphuric acid

In 1599 Thölde published an alchemical text entitled *The Twelve Keys of Basil Valentine*. This work is said to portray the technical aspects of alchemy, albeit symbolically in pictures, paired with allegorical text. The beginning of this work focuses on the search for the elusive Philosopher's Stone. The second is split into 12 parts, each representing a stage in the processes of achieving its creation and illustrated accordingly.

The language of the text itself is covert and only decipherable by someone skilled in the alchemical arts. Lists of ingredients required are given, yet the names regularly changed to befuddle the uninitiated and keep the book's secrets closed to the ignorant reader. Some suggest this linguistic trickery mirrors the transmutation of the ingredients themselves, as they would change in the alchemical process.

A number of modern scholars have attempted to decode the stages. Some suggest that they do indeed reflect actual laboratory techniques that could be used and explain possible results, while other depictions reveal alchemical theories. Overall, the work still remains a mystery.

Works attributed to Basil Valentine have now been translated into many languages, including English, French and Russian, and they are widely available in the public domain.

"The language of the text itself is covert and only decipherable by someone skilled in the alchemical arts"

Images source: Wiki

Rosicrucianism declined in popularity during the 17th century due to the European intellectual movement, the Enlightenment

This emblematic image of the Invisible College of the Rosy Cross emerged in 1618

Rosicrucianism

When ancient manifestos telling of a secret brotherhood emerged after being 'hidden' for decades, a new spiritual movement began

Written by David Crookes

Europe in the early 17th century was not a happy place. It was a continent marked by religious divisions and political strife which would escalate into the bloody Thirty Years' War that led to eight million lives being lost.

At the same time, it was a period of great change. During the century, modern philosophy and science emerged thanks to impressive thinkers such as Newton and Descartes. But were these men also members of the spiritual movement Rosicrucianism? Some have said so but, alas, we may never know.

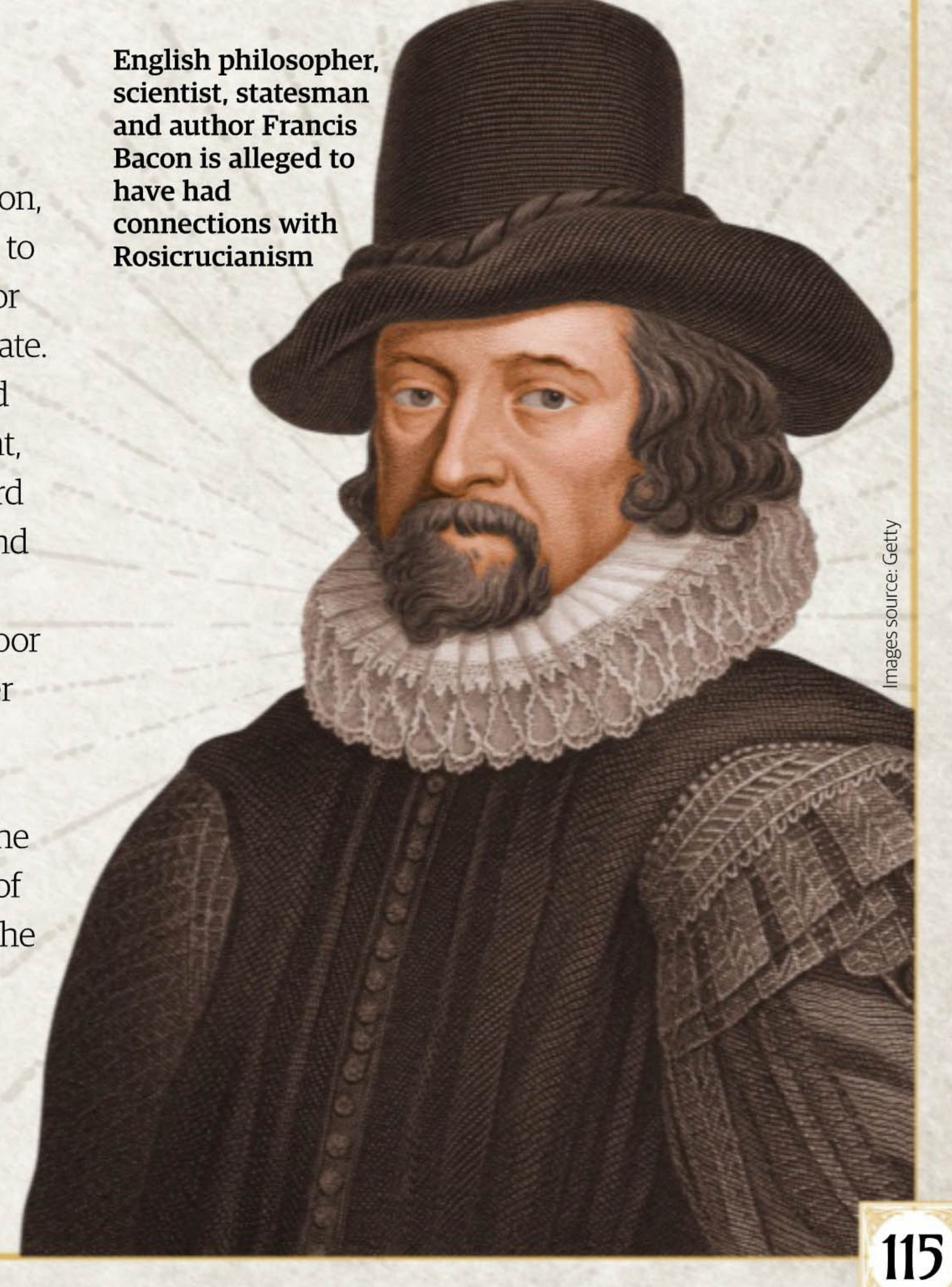
Key to Rosicrucianism is the belief that followers are party to life-changing secrets that originated in ancient times

There are a great many stories and myths about Rosicrucianism, not least those that surround its origins. What we know to be true, however, is that in 1614 in the Holy Roman Empire state of Hesse-Kassel, located in present-day Germany, the first of two anonymously published manifestos was published that would cause a huge stir - not least because they apparently shed light on a supposedly secret brotherhood that no-one had heard of before.

From that point on, you can take much of the origin story with a pinch of salt. For while the first of these manifestos, the *Fama Fraternitatis of the Meritorious Order of the Rosy Cross*, was a revelation to all who read or learned about it, it was heralded as a hoax, a joke or mere allegory, depending on the interpretation, almost from the start. But that's not to say it didn't have many followers or believers, or that it wasn't legitimate. Quite the opposite. It was viewed as another path to enlightenment, and many saw it as a way forward for intellectual, social, religious and political reform.

The *Fama Fraternitatis* told of a poor German doctor and mystic philosopher called Christian Rosenkreuz who, it was claimed, had travelled across Damascus, Egypt and Morocco towards Jerusalem at the turn of the 15th century in a bid to learn the occult secrets of the universe, obtain true wisdom and discover the elixir of life.

Over the course of his journey, Rosenkreuz (or Father Brother C.R.C as he was referred to in the text), was said to have studied under secret Arabian masters of the occult arts, and he is understood to have built up an enviable knowledge of physics, mathematics, magic, and Kabbalah.



English philosopher, scientist, statesman and author Francis Bacon is alleged to have had connections with Rosicrucianism

Images source: Getty

The tree of knowledge of good and evil, taken from *Figure segrete dei Rosacroce* (Secret Symbols of the Rosicrucians), 1785

The symbol of the Rose Cross

The Rose Cross, otherwise known as the Rosy Cross, was said to have been created by Christian Rosenkreuz, the founder of Rosicrucianism. But since we know Rosenkreuz to be fictional, we can suppose it was actually the work of whoever produced the manifestos that underpinned the movement.

It takes the Christian symbol of the cross and embeds it with a rose at its centre, and it clearly marries well with Christian Rosenkreuz's name. What it actually symbolises is open to debate, although some posit that the cross represents the human body and the rose the unfolding consciousness of individuals.

The Rose Cross has also come to represent silence and salvation for some, while others see it as symbol of human reproduction being elevated to the spiritual, with the rose being female and the cross male.

Such is its power and attractiveness, it came to be used by more modern groups such as the Hermetic Order of the Golden Dawn, an organisation which was devoted to the study and practice of the occult from 1887 to 1903. It still forms part of the emblems of the Rosicrucian Fellowship and the Ancient Mystical Order Rosae Crucis, or AMORC.

The colour of the rose which sits upon the cross has alternated between red, gold and white

When he returned to Germany in 1407, he felt able and compelled to impart what he had learned, but it was claimed that he was ridiculed by the literati. Instead, he founded the Rosicrucian Order, or Order of the Rose Cross, and initially shared his knowledge with three receptive doctors. Two years later, Rosenkreuz went on to build a sanctuary called the House of the Holy Spirit, where the followers of the Order – who by now numbered eight – would meet every year on the same day.

Each of those men were understood to be good doctors, determined to heal the sick for free. They agreed to wear only the dress of the country they were in, to continue the Order by finding someone worthy to succeed themselves after death, and to ensure that the Fraternity would remain a closely guarded secret for 100 years.

> Johann Valentin Andreae, who wrote *The Chymical Wedding of Christian Rosenkreuz*, said Rosicrucianism was an object of fun

But while it was suggested that Rosenkreuz himself had scribed the words, squirrelling the resulting manuscript away only for it be discovered later, only fundamentalists really took it literally or believed the man actually existed. The rest saw *Fama Fraternitatis* as an allegorical manuscript, although some have also come to believe that the Order of the Rose Cross may have been a disguise for another secret movement.

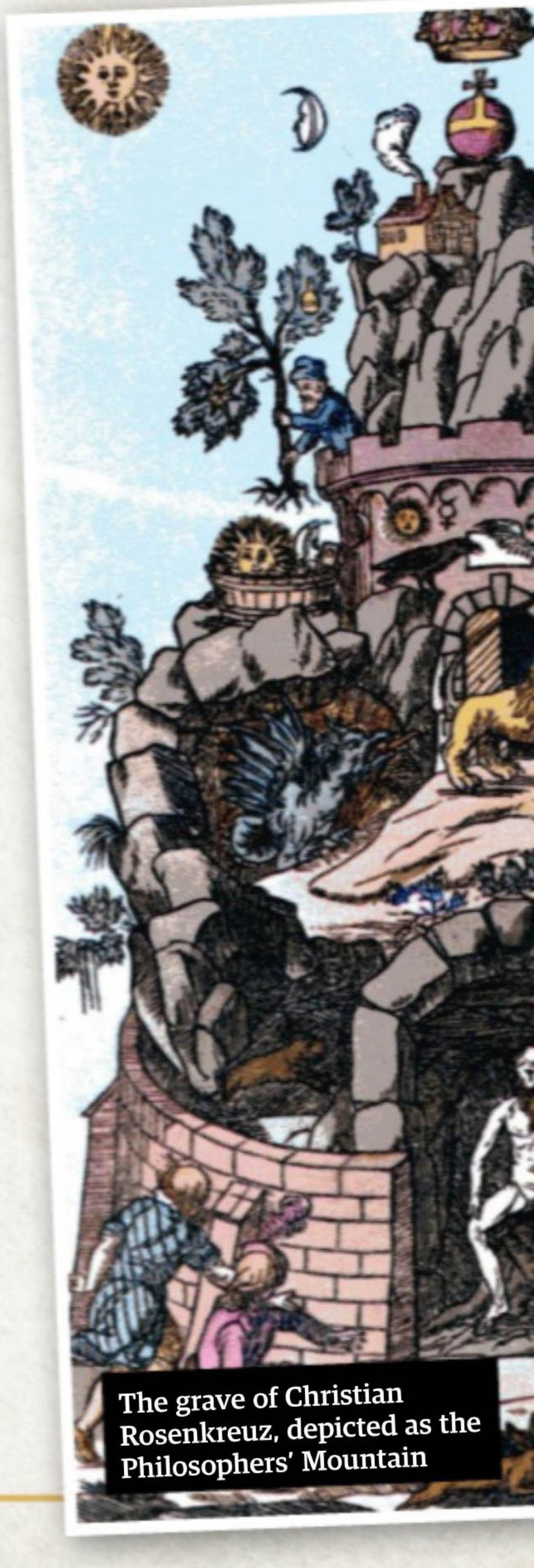
In any case, the point of Rosicrucianism was that it shed light on an ancient world order, blending science, alchemy, arts and mysticism with an emphasis on acquired knowledge as a way for mankind to move forward. Like Kabbalah, it pointed to one truth, told via the use of various symbols, parables and metaphors.

Fama Fraternitatis explored philosophy, religion and ethics, and this was furthered in the second manifesto, *Confessio Fraternitatis* (*The Confessio*) in 1615, which not only explicitly stated it was communicating "by parables" but said Rosenkreuz's knowledge had been imparted to him by angels and spirits.

It cemented the esoteric order in the minds of many, and the fact that they were "concealed from the average man" and able to "provide insight into nature, the physical universe and the spiritual realm" helped to make them feel important. There was comfort in the belief that the movement heavily pre-dated contemporary times, even if it did not. Adding to the mystery was the claim that Brother Rosenkreuz was laid to rest in his own sanctuary in 1484 aged 106 – a vault said to contain many treasures and to be lit by an inner sun.

The claim that this was found in a perfect state of preservation 120 years later in 1604 was merely a signal for general reformation, according to Dame Frances Yates, author of *The Rosicrucian Enlightenment*. She says the opening of the vault symbolised the opening of a door in Europe and it was to lead to a new age of understanding. This displayed parallels with Christianity. Indeed, the Lutheran theologian Johann Valentin Andreae is said to have written the manifestos himself, although that is disputed and a question that will perhaps never be resolved.

Andreae did write an odd alchemical romance called *The Chymical Wedding of Christian Rosenkreuz* in 1616, however, and it too proved very influential. Again, there were references of sorts to Christianity, not least in the division of the story into Seven Days, much like Genesis. There is also a nod to the Father of Lights – a phrase that appears in the Book of James in the King James Bible along with nine Lords – and it is no coincidence there are nine books



The grave of Christian Rosenkreuz, depicted as the Philosophers' Mountain

in the New Testament. So while Andreae said his work was "ludibrium" (an object of fun), the parts that contained hints to the origins of Rosicrucianism were clear.

Reuben Clymer, a former Supreme Grand Master of the Fraternitas Rosae Crucis and author of *The Rosy Cross: Its Teachings*, published in 1965, said the *Fama Fraternitatis* also combined many concepts and esoteric ideas, drawing upon symbolism and Paracelsian principles. Paracelsus pioneered aspects of the medical revolution of the Renaissance, and Rosicrucians would study his *Prognostications*. Meanwhile, the Rosicrucian Michael Maier, who died in 1622, said: "Our origins are Egyptian and Samothrace, the Magi of Persia, the Pythagoreans and the Arabs."

Such deep inspiration and a revelatory world view won the movement many followers, and they numbered some high-profile thinkers such as the English philosopher and scientist Francis Bacon (who some argue may also have been behind the manifestos of 1614 and 1615). Anyone who took the teachings on board would feel special and part of a select elite by the fact that they were hooking into something deemed revelatory. There is an attraction in believing the Rosicrucians are operating invisibly and have the secret and power to put things right.

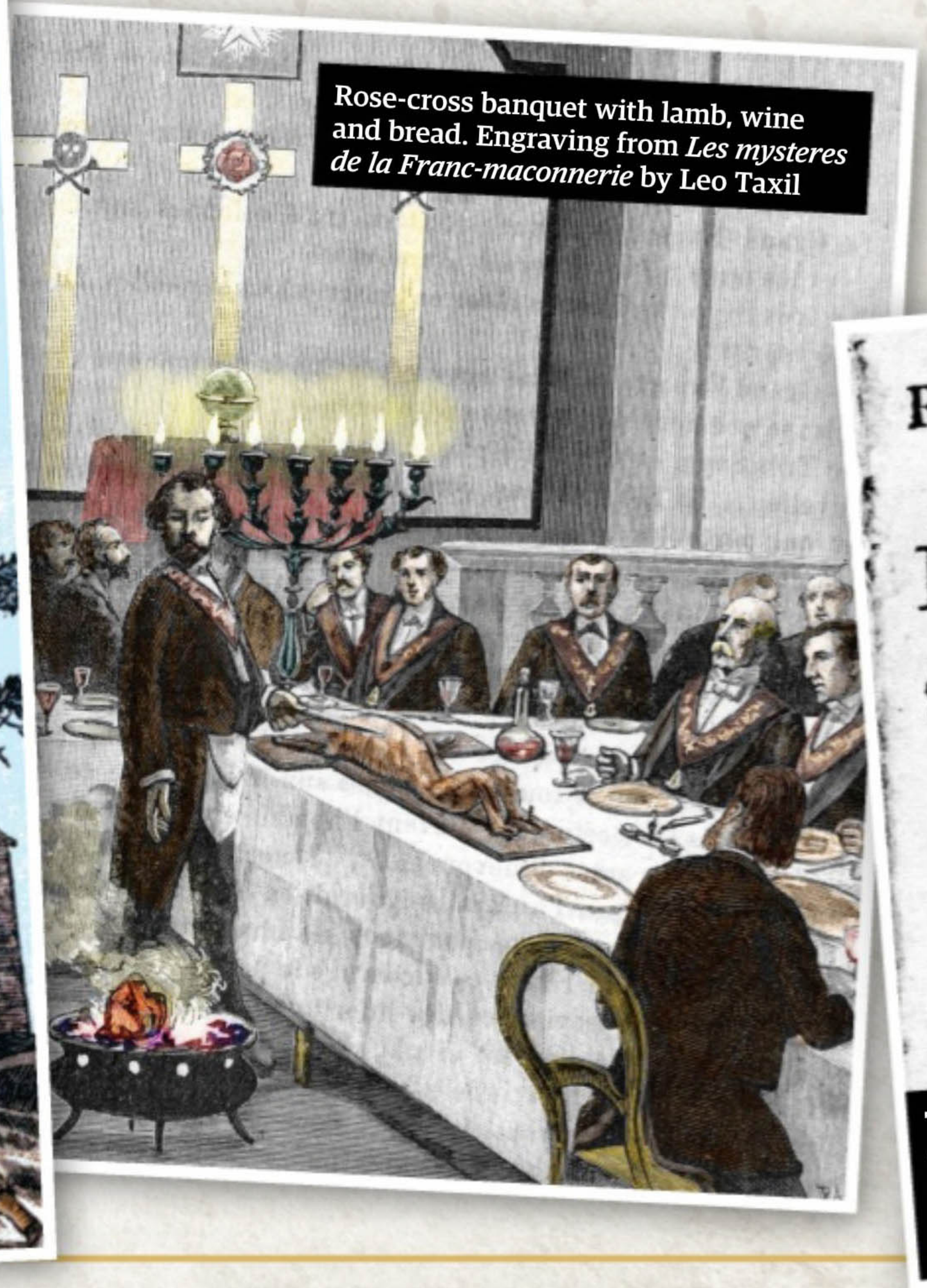
This concept is what is said to have led to the formation of the Invisible College, which became a precursor group to the Royal Society of London. Rosicrucian principles steered people towards a utopian world populated by enlightened people spreading good and sharing knowledge of the arts and natural science. The Invisible College followed the teaching that knowledge can be disseminated among learned men gathering in secret groups.

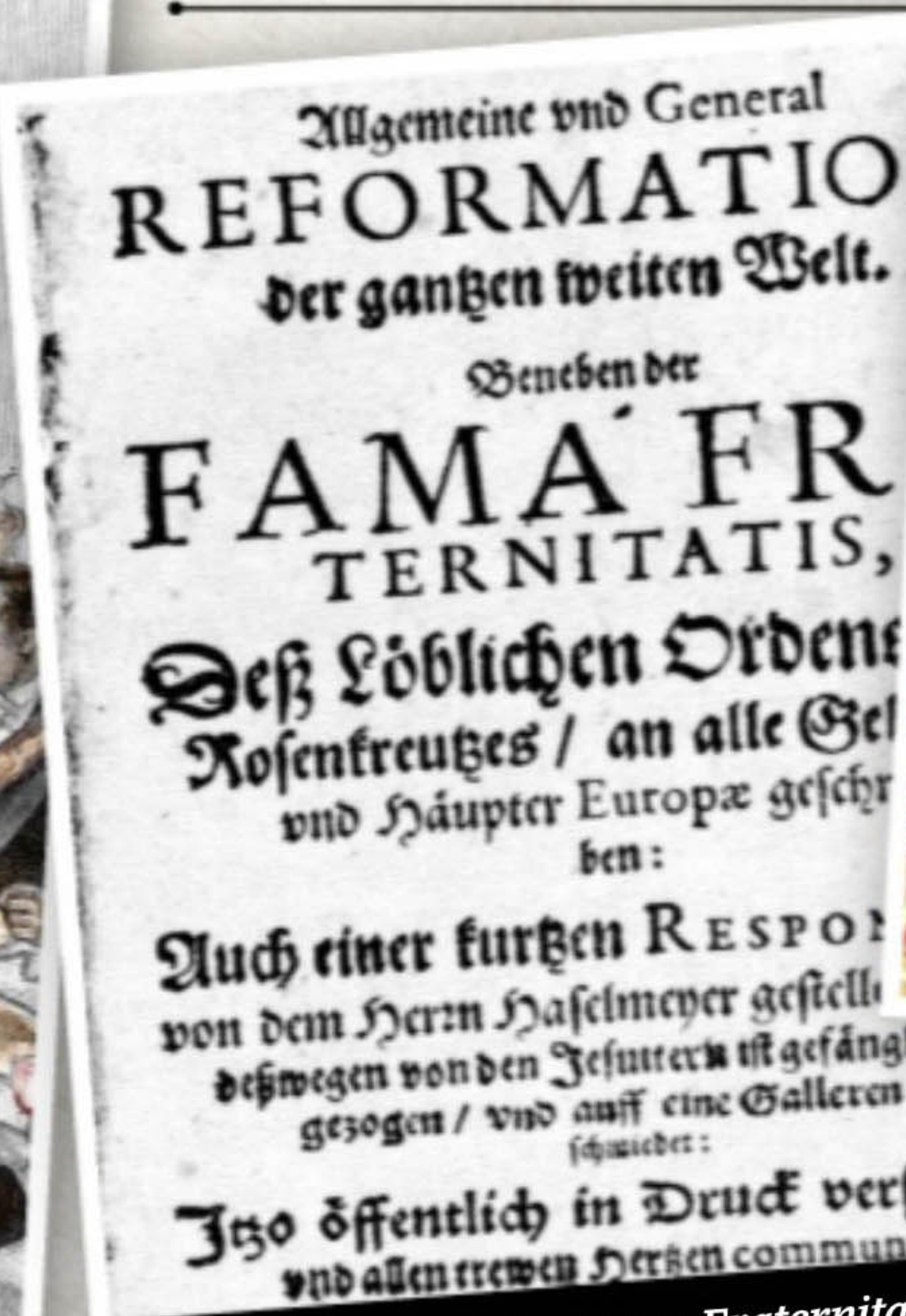
Maier's *Silentium Post Clamores* claimed Rosicrucianism to be drawn from an eternal philosophy underlying all religions

Freemasonry was said to be an outgrowth of Rosicrucianism. Indeed, the English essayist Thomas De Quincey believed the movement influenced Freemasonry when it arrived in England. Prominent Rosicrucian Elias Ashmole joined the Freemasonry on 16 October 1646 and, in 1750, there was a reference to English Freemasons having copied some Rosicrucian ceremonies.

What this points to, however, is Rosicrucianism leading to secret societies rather than starting out as one. For while the story of Rosenkreuz makes claims of a brotherhood that met behind closed doors and remained hidden from society, it is more likely that Rosicrucianism formed in the early 17th century and that it did so very much out in the open, given that published work of that nature was difficult to keep under wraps.

"Rosicrucianism shed light on an ancient world order, blending science, arts and mysticism"


Rose-cross banquet with lamb, wine and bread. Engraving from *Les mysteres de la Franc-maconnerie* by Leo Taxil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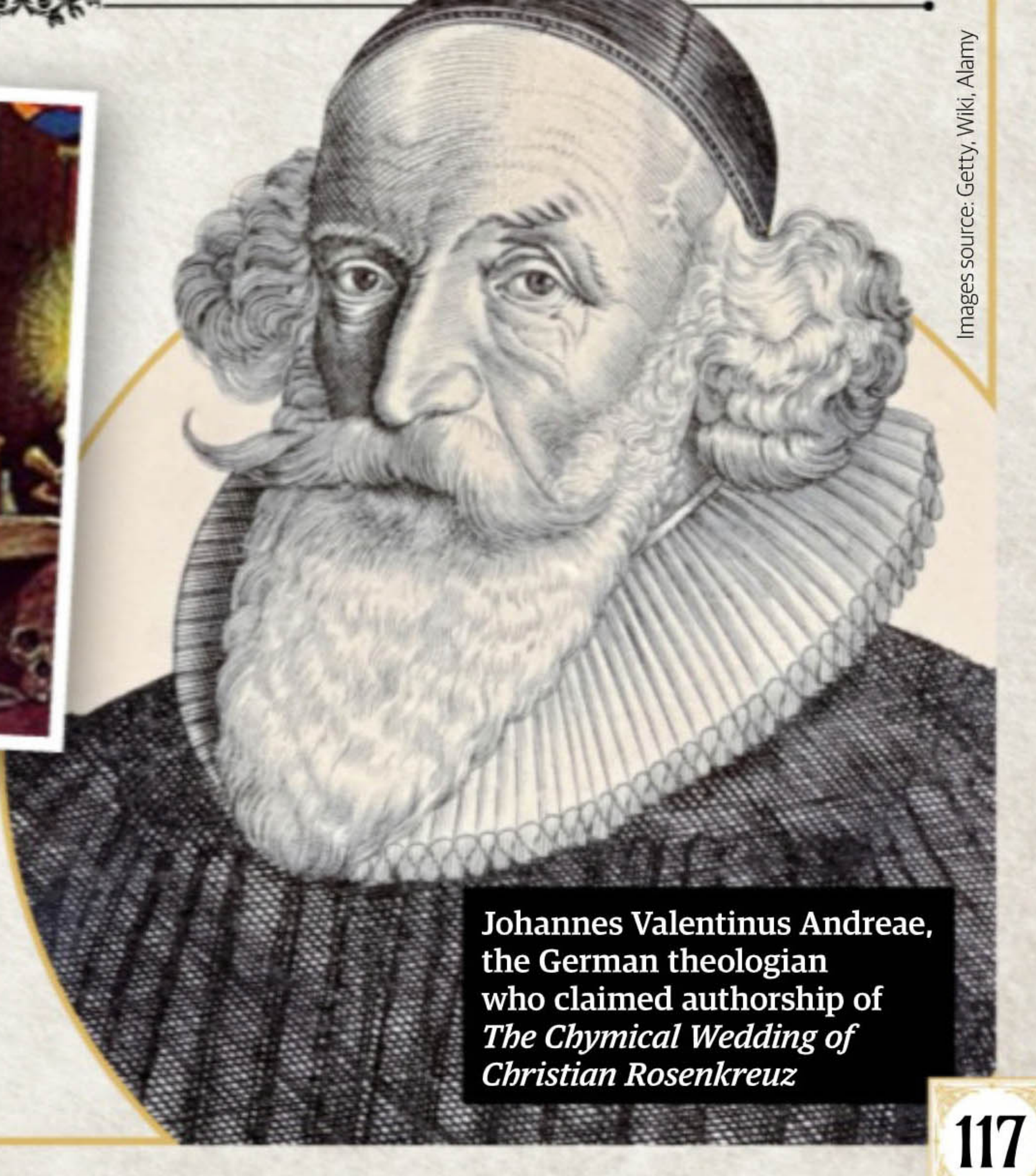
The first page of the *Fama Fraternitatis Rosae Crucis*, which first told of Father C.R. (aka Christian Rosenkreuz)
Right: A symbolic representation of Christian Rosenkreuz, whom most agree was fictional


Johannes Valentinus Andreae, the German theologian who claimed authorship of *The Chymical Wedding of Christian Rosenkreuz*

Images source: Getty, Wiki, Alamy

Alchemy and chemistry in an age of transition

The alchemists were obsessed with transmuting base metals into gold. Though they failed, their investigations helped give birth to modern chemistry

Written by Marc DeSantis

Alchemy in late Medieval Europe brought with it many risks. The Roman Catholic Church was deeply opposed to its practice, being highly suspicious of its ancient connections to pagan practices and magic. Bodily immortality granted by potions such as the fabled 'elixir of life' had no place in a religious environment in which eternal life could be obtained only through the Christian sacraments. So noxious was alchemy during this time that both political and religious figures forbade its practice, and the Italian poet Dante Alighieri confidently stuck alchemists in Hell in the *Divine Comedy*.

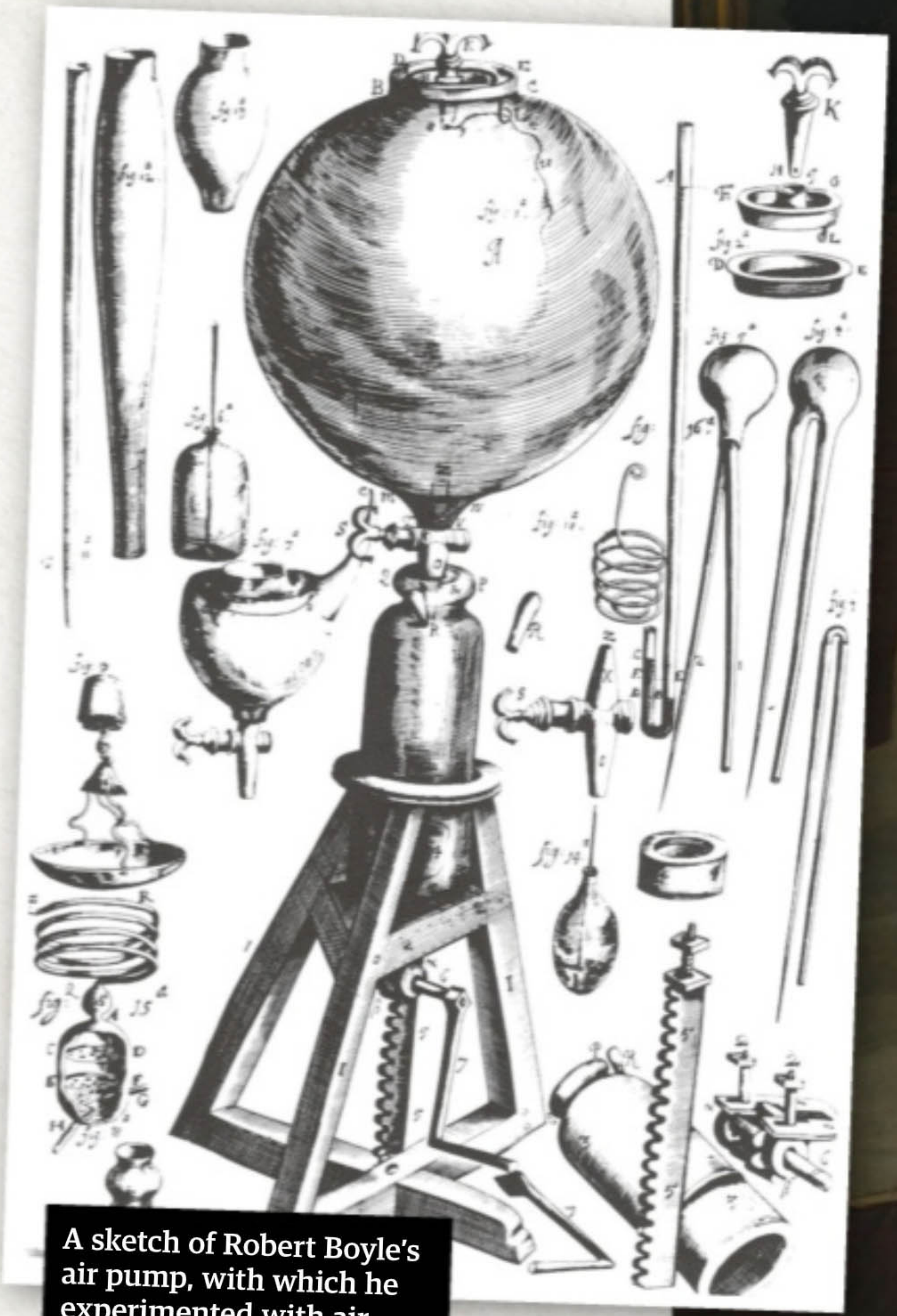
Late Medieval alchemy also suffered from its continued lack of success in transforming lead into gold, one of its most prominent endeavours. Doubt as to the possibility of transmutation thus increased, though some alchemists continued doggedly in their quest.

The transition from alchemy, with its obsessions with the four elements as propounded by Aristotle, the search for the elixir of life, and the transmutation of base metals to gold, to modern chemistry, in the 17th century, was not a smooth one. This was a hybrid period in the development of chemistry, one in which practitioners adhering to older alchemical precepts lived and worked under the same sky as those observing new, experiment-based principles.

Some figures who loom large in the history of science, such as Robert Boyle, or that paragon of rationality, Isaac Newton, actually straddled the divide between two kinds of chemistry. The discipline was not unique in this regard. The preeminent astronomers Johannes Kepler and Galileo Galilei both also devised astrological horoscopes, for example. Chemistry would at last find its recognisable, modern shape in the early eighteenth century, particularly in the person of the French chemist Antoine Lavoisier.

ROBERT BOYLE

Robert Boyle (1627-1691) came from prosperous stock, being a scion of a landholding English family in Ireland that had colonised the island in



A sketch of Robert Boyle's air pump, with which he experimented with air

Antoine Lavoisier shown with his wife Marie-Anne, who was also a chemist

Images source: Wiki

The Englishman Robert Boyle, author of *The Sceptical Chymist*, did much to lead chemistry away from alchemy to a more scientific form

the 16th century. The vicissitudes of fortune saw Boyle's once-prosperous father tossed into gaol for corruption. His father was later acquitted of the charges brought against him, subsequently bought more land in Ireland, and again grew rich, becoming in time the Earl of Cork.

Boyle's scientific career would be boosted by his family's wealth. He was tutored privately, and then sent to school at Eton. He could also afford to travel across Europe, including Italy, where he familiarized himself with Galileo's scientific contributions. Boyle received an honorary M.D. from Oxford, and also became a member of the Royal Society, a prominent British science association.

Boyle was thus no fringe figure, but a scientist standing very much in the centre of scientific learning of the era. He was in contact, via letters, with other scientists, exchanging news of his own discoveries with them and disseminating theirs to wider audiences. He was also a powerhouse of chemical inquiry, running his own private laboratory, overseeing the experiments of others, and offering funds to yet more to conduct their own research. His 1661 work, *The Sceptical Chymist*, did much to establish chemistry as being something that stood apart from earlier alchemy, it being based squarely on experimentation, and not old-fashioned appeals to authority.

Among Boyle's achievements was his pioneering work on analytical chemistry, in which he enthusiastically performed analysis via solution chemistry instead of the traditional pyrolysis, in which substances were burned. Fire, Boyle realised, could not break materials back down into their constituent ingredients, and thus pyrolysis could never be a useful analytical tool. Solution chemistry was much more reliable. Boyle used acids and alkalis - reagents - that could actually dissolve substances so that they could be studied properly.

Boyle himself may be judged one of the first true chemists. He quantified what he did, and took careful measurements. One of his greatest achievements, concerning air pressure, and today known as Boyle's Law, holds that the volume of a given mass of air is inversely proportional to the pressure applied to it.

Boyle also rejected the ancient theories of chemical composition that held that matter was composed of earth, air, fire, and water. He had no time for either Aristotle's theory of the Four Elements nor the Three Principles theory, which saw matter as comprised of sulphur, mercury, and salt. Boyle was unsatisfied with the prevalent notion that all matter was a combination of four elements, but given the limitations of his day, he had no notion as what these might actually be nor how many of them there were. And despite his sterling work shepherding chemistry into the modern form it holds today, Boyle still believed that alchemical transmutation might be possible. At his death in 1691, he left another scientific giant of the age, Isaac Newton, with a bit of red earth that Boyle thought might be capable of transforming mercury into gold.

Alchemist Johann Friedrich Böttger was imprisoned until he worked out how to chemically produce porcelain in 1708

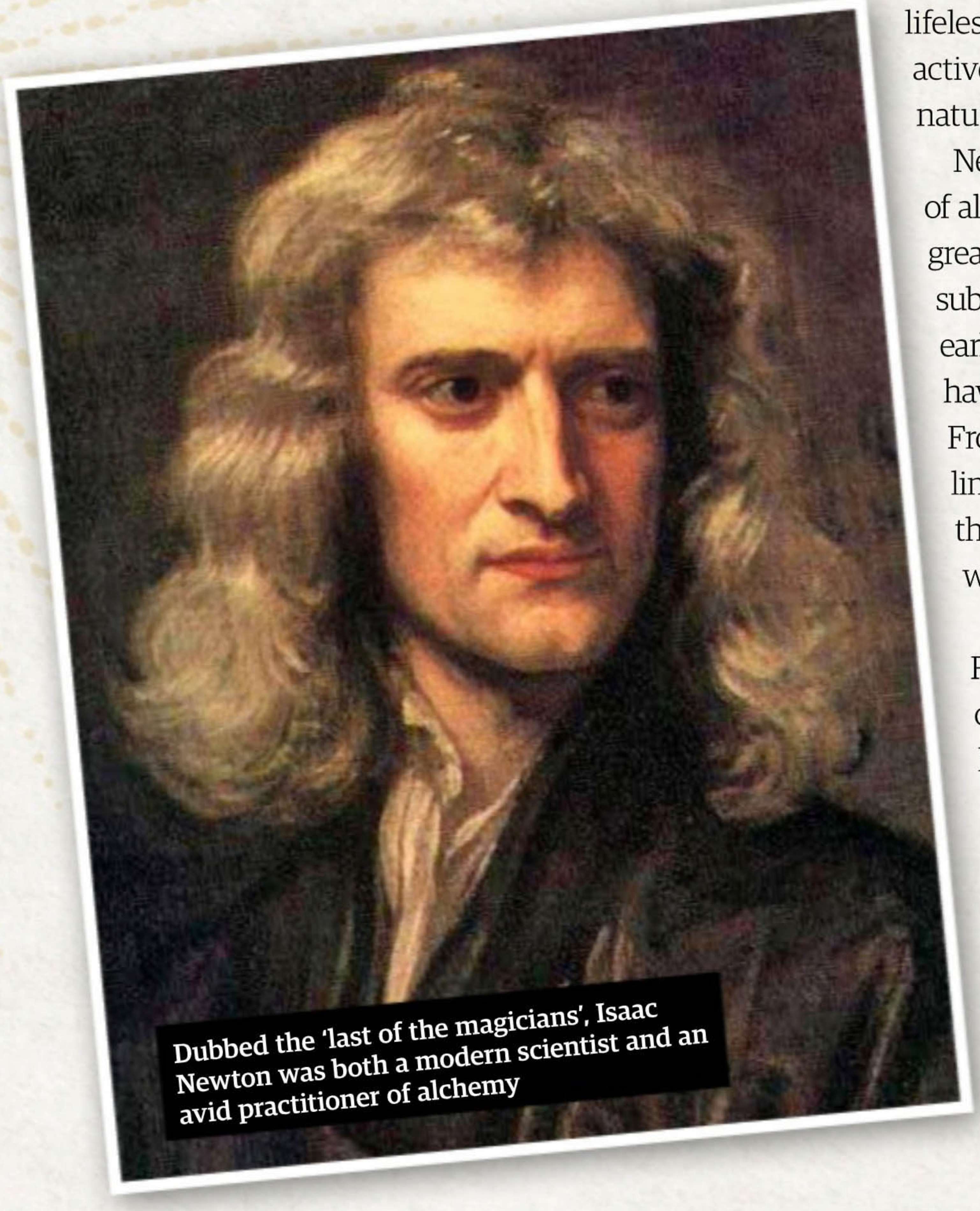
ISAAC NEWTON: THE LAST OF THE MAGICIANS

Though Isaac Newton (1642-1727) is today best-known for his ground-breaking achievements in physics, he was also an enthusiastic investigator of chemical science, filling his notebooks with numerous entries on various substances such as mercury and antimony. Newton devoted much time to alchemy, purchasing several alchemical texts, as well as the requisite apparatus. Alchemy had already become a looked-down-upon endeavour, so Newton made use of unpublished works that passed from one alchemist to another on an informal basis. Newton himself made his own handwritten copies of some of the alchemical works that came into his possession.

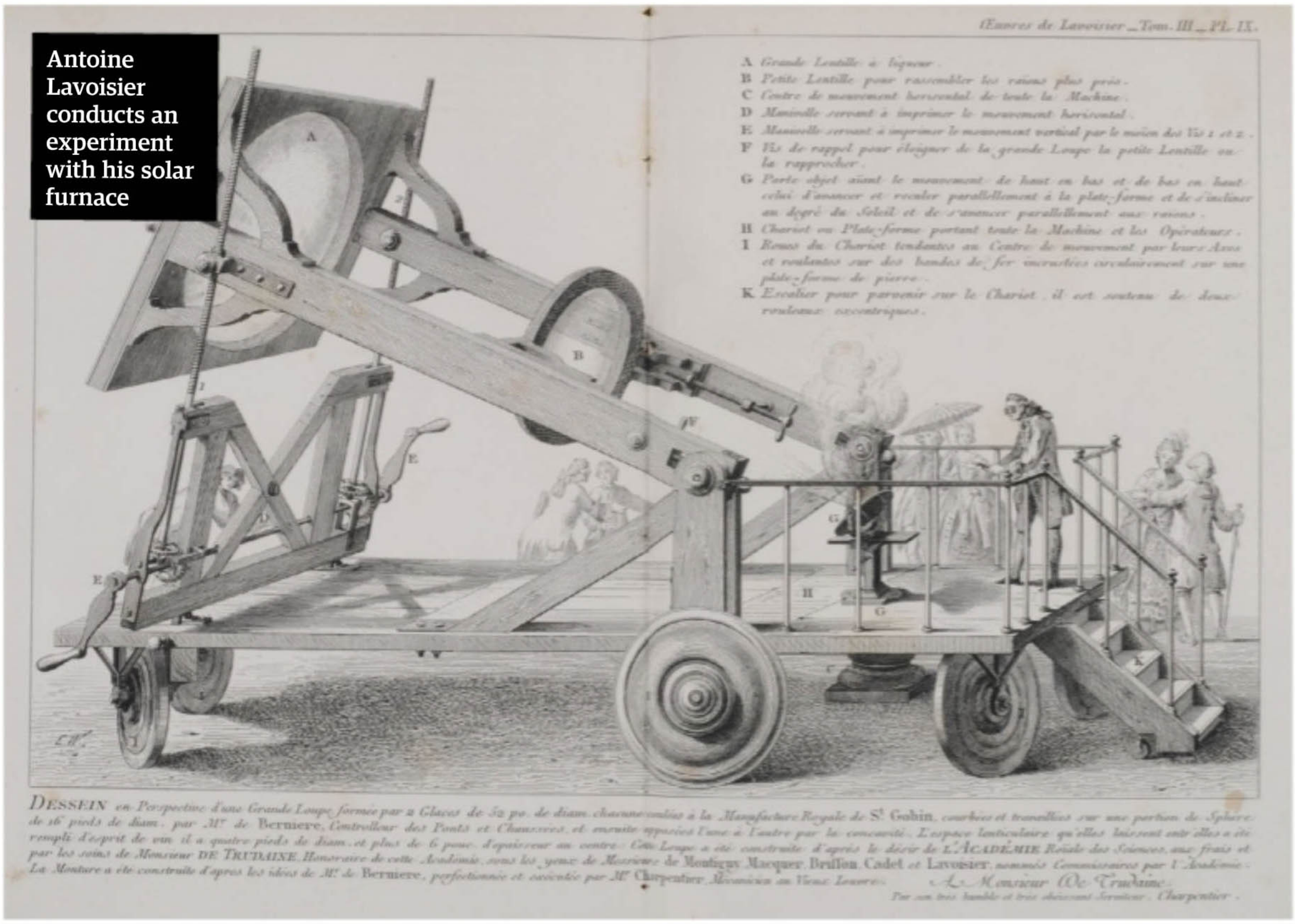
Physics and alchemy differed markedly in their philosophical approaches. Physics, as practiced by Newton, had no place for 'spirit' in the operation of nature. Every act was purely physical. Alchemy, however, was deeply spiritual in its outlook, seeing nature as being suffused by spirit. And unlike matter as it was described in physics, which was lifeless, alchemy saw matter as being filled with active principles that were the prime causes of natural phenomena.

Newton was no dabbler in the pseudoscience of alchemy, despite his reputation as perhaps the greatest of all scientists. The time spent on the subject was extensive. Unlike so many other, earlier, alchemists, Newton does not seem to have been motivated by a desire to produce gold. From his notes, this appears to have been of only limited interest to him. Instead, his real aim was the truth. Newton was a searcher, and alchemy was another avenue of exploration.

Newton was also fascinated by the Rosicrucians, a 17th century brotherhood of mystical alchemists. When he passed, his library was found to contain an extensive collection of alchemical works, and prominent among these were books concerning the Rosicrucians. These included a copy of the Rosicrucian Manifesto that is replete with Newton's own handwritten notes. Further, no fewer than nine volumes penned by Michael



Dubbed the 'last of the magicians', Isaac Newton was both a modern scientist and an avid practitioner of alchemy


Œuvres de Lavoisier _ Tom. III _ Pl. IX.

Antoine Lavoisier conducts an experiment with his solar furnace

Maier, a noted authority on the Rosicrucian Society, were in his library at the time of his death.

The extent of Newton's involvement in alchemical research would remain obscured for centuries after his death. In the 1930s, Newton's papers appeared on the auction block, and some were purchased by the famed economist John Maynard Keynes. From these and others of Newton's papers that he collected, Keynes discovered a side of Newton scarcely known to history. Keynes concluded that "Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago."

CHEMISTRY IN THE AGE OF REASON

The 18th century would see the emergence of modern approaches to science. Discoveries were shared freely by scientists with their peers, not kept secret, and scientific societies were founded with government support across Europe.

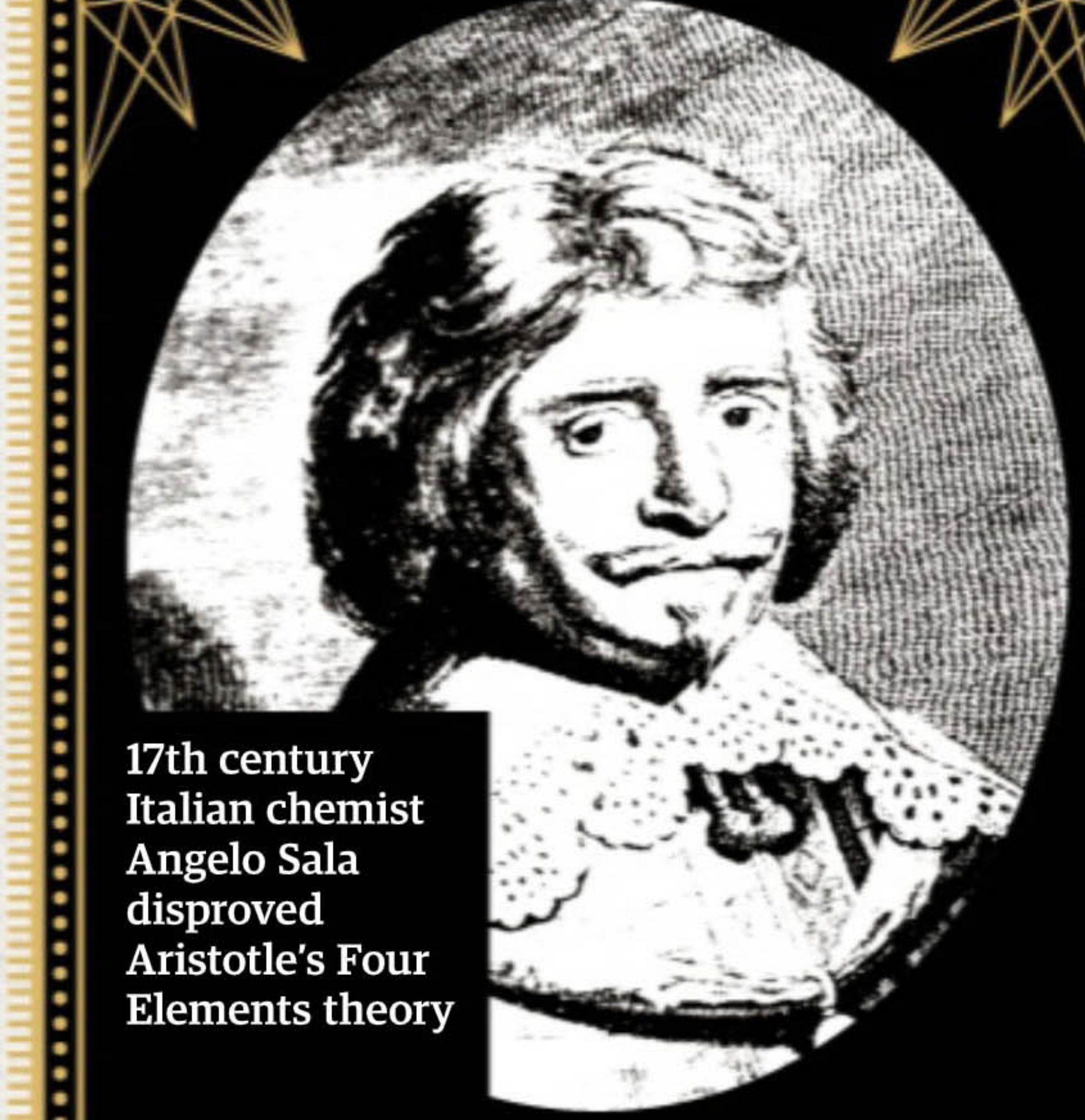
The 'Chemical Revolution' transformed the discipline of chemistry in the 18th century. In a sharp break with the past, chemistry would now be characterised by precision in measurements and rigidly logical theory. One of the Revolution's foremost, and earliest, advances was to identify different chemicals as distinct materials with their own unique properties. Speculation would have to be supported by data derived from verifiable, repeatable experiments.

The spirit of the new age was exemplified by the Frenchman Antoine Lavoisier (1743-1794). His interest in chemistry was kindled while he was still in law school. Though he would pass the bar examination, his heart would belong to chemistry. Lavoisier, who had by then already contributed research into better street lighting, became a member of France's Academy of Science when he was just 21 years old.

Lavoisier would go on to make many other contributions to chemistry. He demonstrated by experiment that, contrary to hoary alchemical belief, water did not transmute into earth when heated for a long duration. This experiment worked to establish the principle of mass conservation, one of chemistry's bedrock tenets.

In 1775, Lavoisier identified oxygen, a unique gas that was especially supportive of combustion, more so that ordinary air. On the basis of the new-found oxygen, he would also do away with another outmoded alchemical theory, that of the oily, fire-starting substance phlogiston. Lavoisier would also establish the chemical elements as those substances that could not be reduced to simpler substances by chemical means. Chemicals were either elements or compounds of elements.

He also helped name chemicals, thereby originating the systematic nomenclature used today in modern chemistry. By Lavoisier's death at the age of 51 in 1794, chemistry had acquired the contours that it still holds today.



17th century Italian chemist Angelo Sala disproved Aristotle's Four Elements theory

Angelo Sala

The chemist Angelo Sala (1576-1637) stood apart from the mass of his fellow Italians on account of his Calvinist Protestant religion. Like Boyle and Newton, he straddled the dividing line between alchemist and chemist, being a believer in the theory of Three Principles. One of his greatest contributions was proving that substances retained their identities even after they had been combined with others. This theory was by no means new, but it ran contrary to Aristotle, who believed that substances' individual identities were destroyed utterly when they reacted with one another, leaving behind no traces of the original combining materials.

Sala thought otherwise, and sought the truth. In 1617, in his *The Anatomy of Vitriol*, he informed the world of an experiment he had conducted concerning chemical structure. First, he dissolved a known weight of copper in heated sulphuric acid. He then added water, resulting in 'blue vitriol' – copper sulphate hydrate. Next Sala converted the substance to copper oxide, then reduced it back into copper. Upon weighing the copper, it matched the amount he had started the experiment with. The copper had not been lost at all, but kept its identity even after combination, and this was proven by its complete recovery. Sala had thereby shown that Aristotle's age-old Four Elements theory was incorrect.

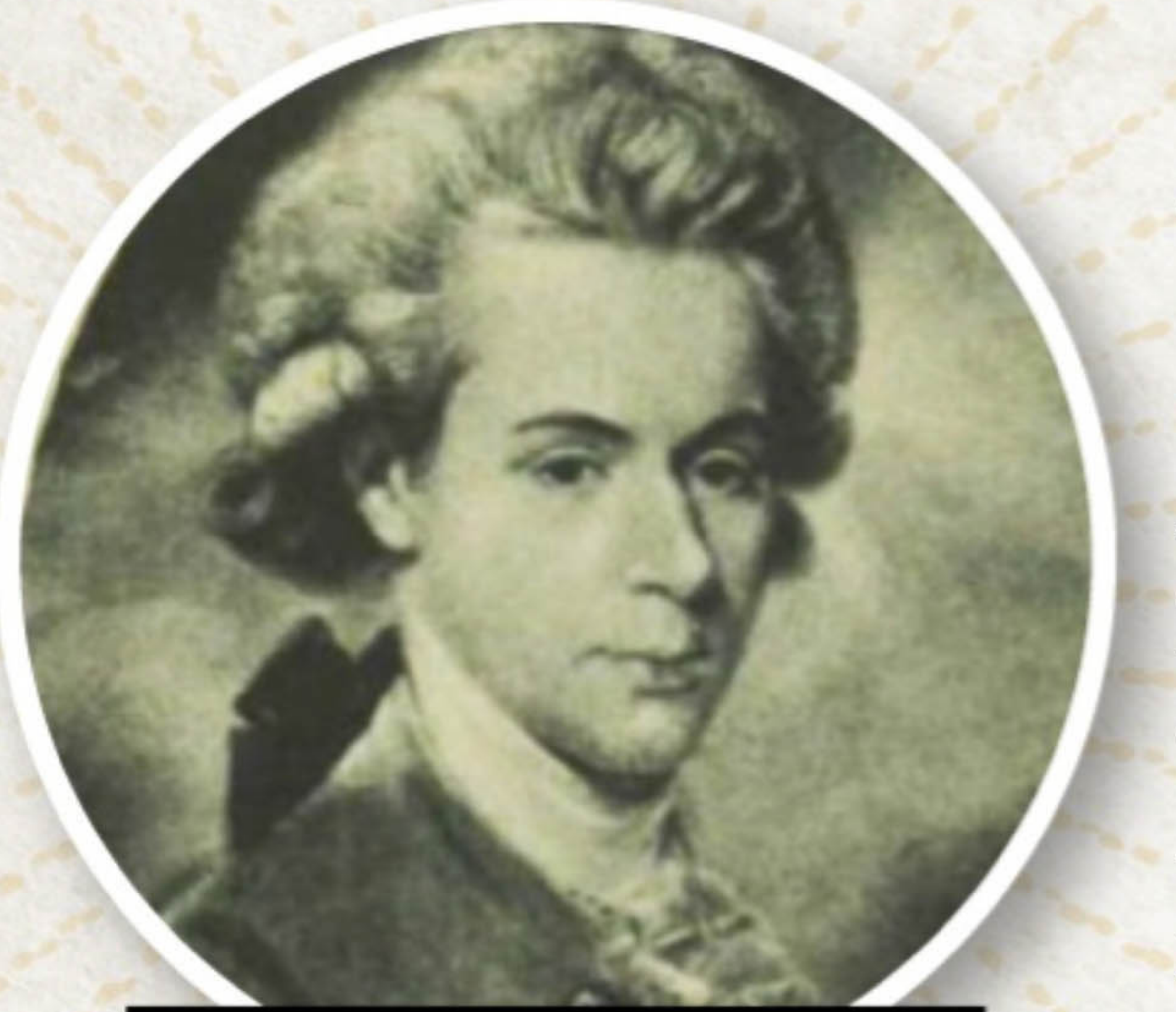
Sala's also demonstrated that his self-made blue vitriol was identical with that of naturally-occurring blue vitriol. This crushed the entire theory of the transmutation. Traditional alchemical thought had held that minerals were living things, with souls, that grew in the earth. Sala could make synthetic blue vitriol with a run-of-the-mill chemical reaction, thereby proving that it was not a living thing, and that the ancient belief in transmutation was invalid.

Images source: Wiki

The death of alchemy

It is never easy to admit a deception: what lengths would James Price go to in order to conceal the truth?

Written by Willow Winsham



It is believed by some that James Price, aware he was about to be exposed as a fraud, committed suicide to avoid dishonour and embarrassment

Distilled from the leaves of the cherry laurel, laurel water contains hydrocyanic, or prussic, acid: the effect of consuming it is fatal

London-born James Higginbotham became the man known to history as James Price, the name change prompted by a bequest in the will of a relative. Graduating from Oxford with an MA and a medical degree at a young age, Price was elected to the Royal Society in 1781 at the age of just 29.

The brilliantly minded alchemist and chemist believed he could transmute base metals into precious ones, and, exhilarated by his initial apparent success, Price carried out a series of public experiments in May 1782. Before a rapt audience he mixed borax, charcoal and nitre before adding mercury and heating the result in a crucible. The special additional ingredients, however, were the key: two powders - one red and one white - that Price had formulated himself. Red produced gold and white created silver.

Price performed seven experiments in total. The final one, taking place on 25 May 1782, was witnessed by Lords Onslow, King and Palmerstone, with some of the gold produced sent to King George III himself.

A pamphlet written to record Price's extraordinary results, *An Account of some Experiments on Mercury, Silver and Gold*, was hugely successful. However, not everyone was convinced Price's claims were as they seemed.

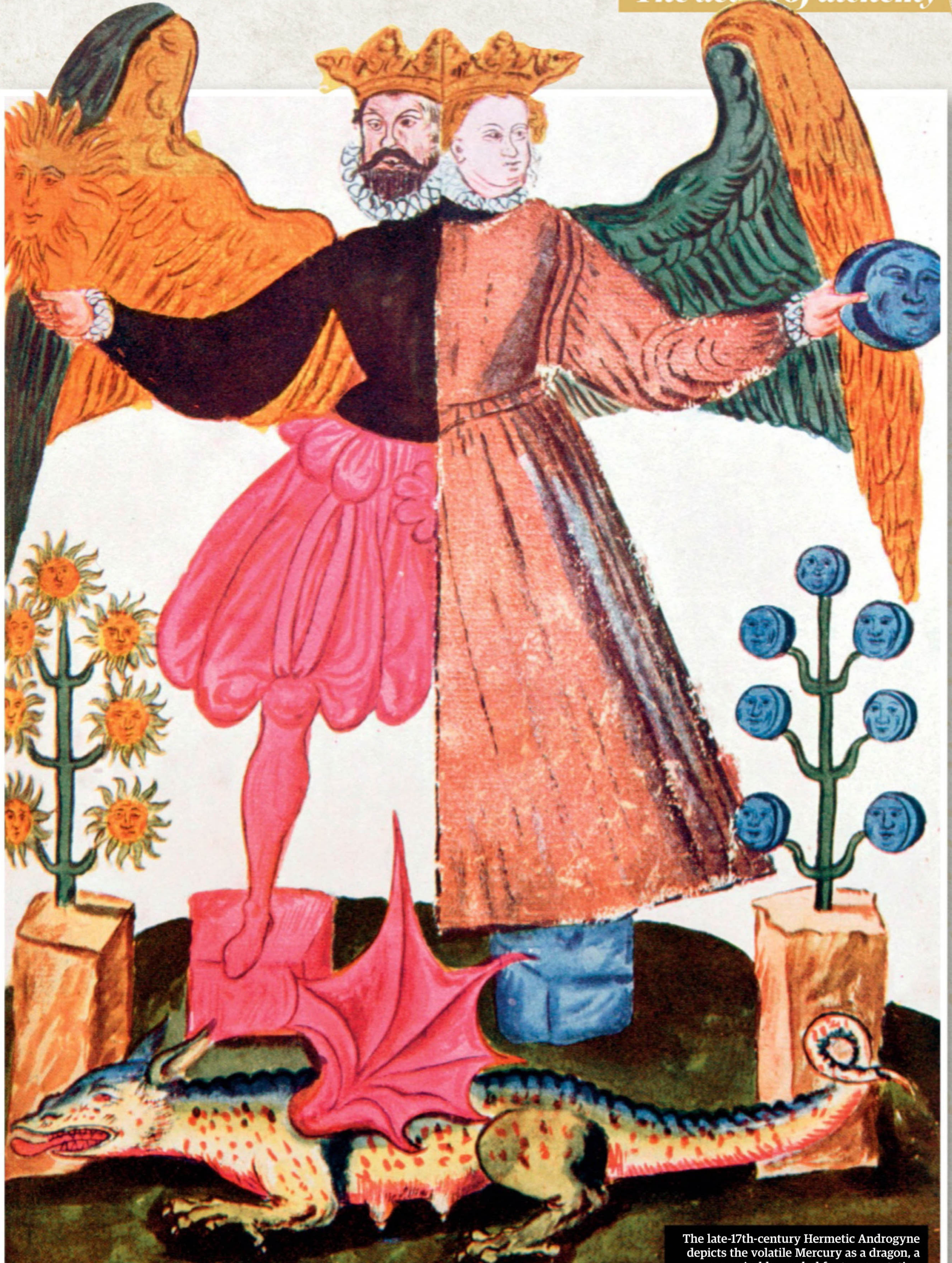
Royal Society members, lead by President Joseph Banks, declared that they would need to witness the experiment with their own eyes before they could support him. Although reluctant to agree, Price's excuses were ignored, and he finally, albeit grudgingly, acquiesced, retreating to his laboratory in Stoke, Surrey, at the start of 1783 to prepare the required powders.

3 August was the date set for this important demonstration. Despite variations in the tale, only three Society members turned up to see what should have been Price's great moment of vindication. Instead, Price greeted the men cordially before events took a turn no one could have predicted.

Price took a long swig from a concealed flask, and just a few moments later he crashed to the floor. He died shortly after, having ingested laurel water, the prussic acid it contained killing him almost instantly.

Rumours were quick to formulate. While suicide was the most plausible explanation for Price's untimely death, there have been suggestions that the three men helped Price fake his own death, urged him to take his own life, or, most extremely, might have been responsible for his murder.

Price's legacy was the downfall of alchemy on English shores: the Royal Society never again permitted investigation into alchemical claims.



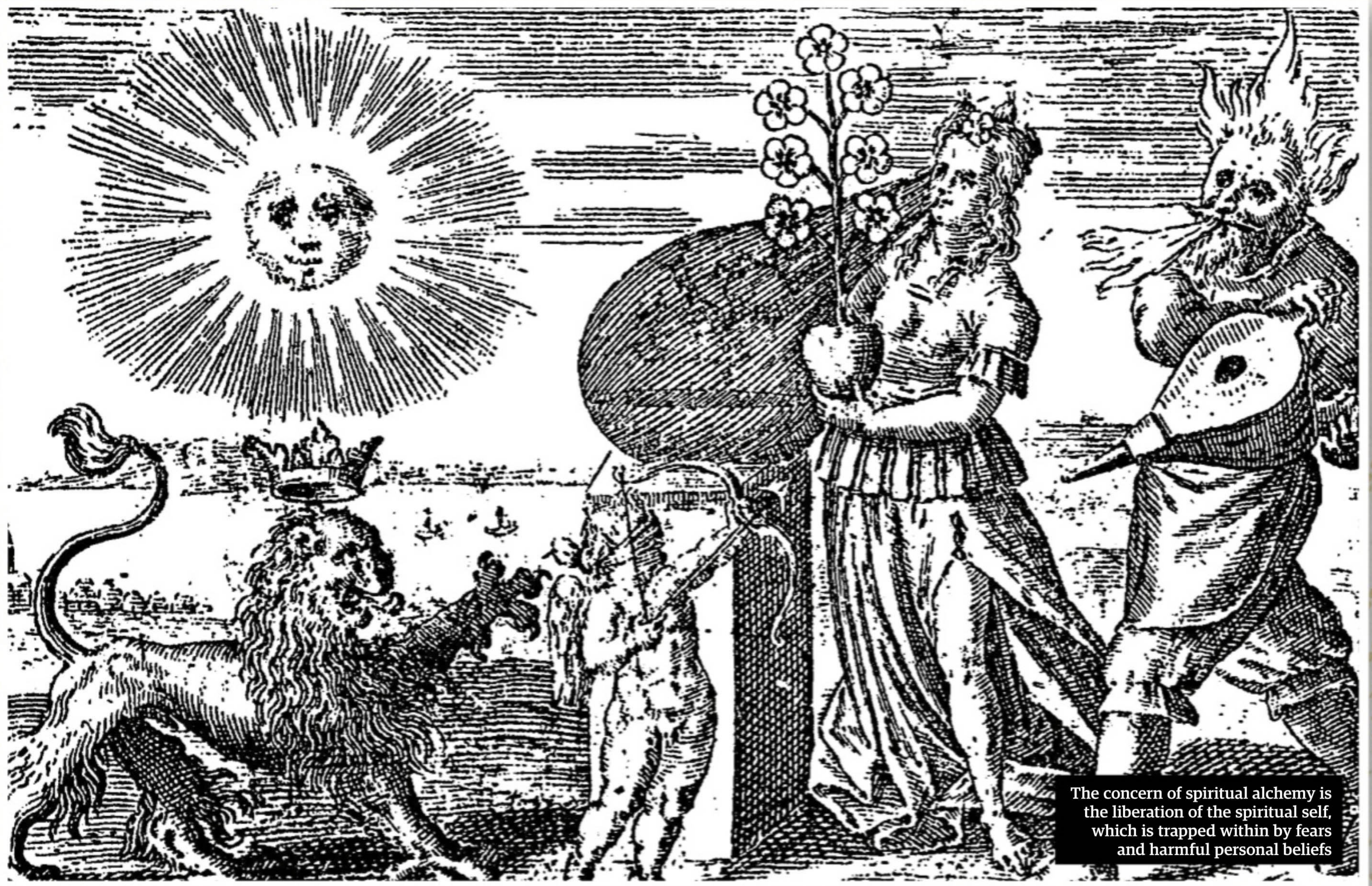
The late-17th-century Hermetic Androgyne depicts the volatile Mercury as a dragon, a recognisable symbol for transmutation

Images source: Getty, Wiki

Cast into the flames

Mary Anne Atwood was greatly influential in the area of spiritual alchemy, but her important work was nearly lost for ever

Written by Willow Winsham



The concern of spiritual alchemy is the liberation of the spiritual self, which is trapped within by fears and harmful personal beliefs

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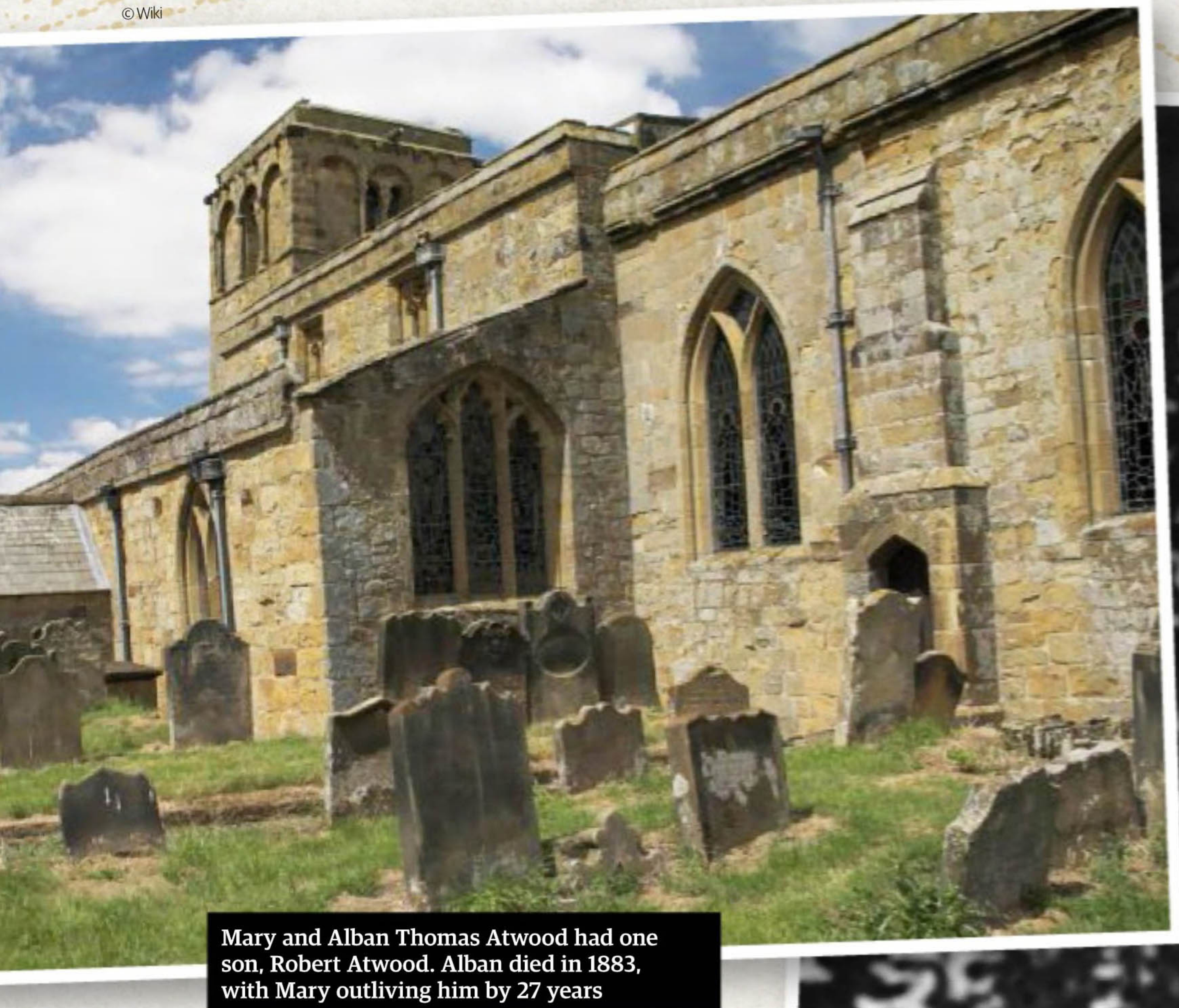

Mary and Alban Thomas Atwood had one son, Robert Atwood. Alban died in 1883, with Mary outliving him by 27 years

Mary and her father Thomas South were the inspiration behind Lindsay Clarke's 1989 alchemical-themed novel, *The Chymical Wedding*

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Mary Anne South was born in 1817 in France, but she did not remain long in the land of her birth; Mary's early years were spent in Gosport, Hampshire.

Although most often remembered by her married name, Mary's main contributions to alchemical writings in fact took place before her marriage. She had a very close relationship with her father Thomas South, a researcher of spirituality with an interest in the hermetic arts, and it was this bond that inspired Mary's interest in and work on alchemy, with the pair often working together.

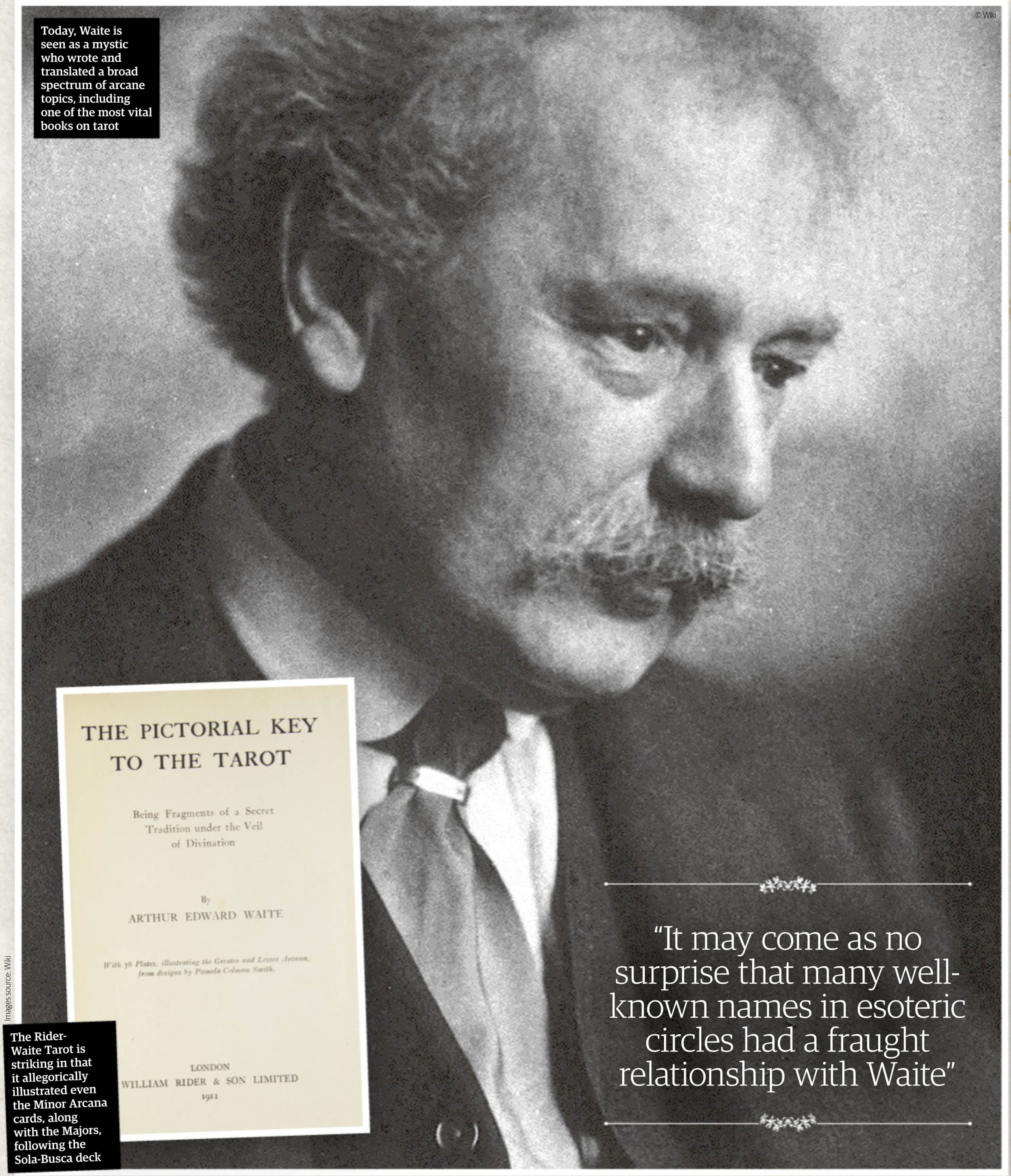
Her lack of a formal education did not set Mary back, and she was known for her proficiency in both Greek and Latin. Considered an intellectual equal by her father, it was this very fact that led to perhaps the greatest tragedy of Mary's life. Father and daughter endeavoured to bring together the body of hermetic wisdom into one single work. Thomas South would write his section in verse, while Mary's would be prose, promulgating the theory that the aim of alchemy was the goal of spiritual perfection. Completing her work before her father, Mary was given his permission to print it without his having read it first. Printed in 1850, the work, *A Suggestive Inquiry into the Hermetic Mystery*, was tragically short-lived. Not long after publication, the majority of copies were taken in by Thomas South himself and burned along with his incomplete poem. Having read it too late, Mary's work, he said, gave away too many secrets. Although ostensibly agreeing with her father, later sources suggest Mary was understandably not in favour of the almost wholesale destruction of her work, the incident leaving her devastated.

In 1859, Mary married Alban Thomas Atwood, an Anglican reverend from a parish near Thirsk in North Yorkshire, where she remained for the rest of her days. Although Mary produced no further texts after *A Suggestive Inquiry*, this did not mean the end of her intellectual endeavours. Her correspondence with several leading Theosophists for the remaining years of her life highlights again the strength of the ideas she held.

Mary died on 13 April 1910, passing after breathing her memorable final words: "I cannot find my centre of gravity." She was laid to rest at Leake Church in Yorkshire. *A Suggestive Inquiry* was republished in 1918, and it has been referred to as one of the main influences on the theories of spiritual interpretation within alchemy.

> "Not long after publication, the majority of copies were taken in by her father and burned along with his incomplete poem"

Images source: Wiki



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Today, Waite is seen as a mystic who wrote and translated a broad spectrum of arcane topics, including one of the most vital books on tarot

THE PICTORIAL KEY
TO THE TAROT

Being Fragments of a Secret
Tradition under the Veil
of Divination

By
ARTHUR EDWARD WAITE

*With 78 Plates, illustrating the Greater and Lesser Arcana,
from designs by Pamela Colman Smith.*

LONDON
WILLIAM RIDER & SON LIMITED
1911

Images source: Wiki

The Rider-Waite Tarot is striking in that it allegorically illustrated even the Minor Arcana cards, along with the Majors, following the Sola-Busca deck

> "It may come as no surprise that many well-known names in esoteric circles had a fraught relationship with Waite"

AE Waite: Mystic, magician, alchemist

The titles given to the man are many, yet the creation of the Rider-Waite tarot is his most enduring legacy to this day

Written by Dee Dee Chainey

Arthur Edward Waite is one of the most prominent figures in the Western Esoteric tradition. Born in New York in 1857, Waite's early life was turbulent. The family faced great hardship when his father, Captain Charles F Waite, a merchant marine, died at sea while his mother, Emma Lovell, the daughter of a rich trader, was pregnant. She chose to return to England, taking Arthur and his infant sister with her. The boy spent his early years studying at a private school in the north of London and moved to St Charles' College in his teenage years.

On leaving school he became a clerk, dedicating much of his time to writing and acting as editor on the magazine *The Unknown World*. While brought up a Roman Catholic, Waite's interest in the esoteric arts grew as he matured, particularly after the death of his sister, Frederika, a loss he had to face at just 17.

In his late twenties, Waite married Ada Lakeman, who was often known as Lucasta. Yet the Fates didn't smile upon the union, and just a few years later tragedy hit the family. Lucasta died in 1924, leaving Waite alone, the sole caregiver to their only daughter, Sybil. After his first wife's death, Waite went on to remarry, this time to a lady by the name of Mary Broadbent Schofield.

Waite had unearthed the wisdom of Eliphas Levi while poring over texts in the British Museum's grand library. He joined the Outer Order of the Hermetic Order of the Golden Dawn in 1891 in an initiation ceremony at the home of its founder, Samuel Mathers. His relationship with other members would prove volatile, and he left two years later only to return in 1896, advancing to the second order in 1899.

Waite's influence grew as he became a Freemason in 1901, then joined the Societas Rosicruciana in Anglia soon after. Rife with disagreements, the future of the Golden Dawn became increasingly uncertain, and many offshoots began to emerge. Its decline was imminent.

A year after leaving the order, Waite formed the Fellowship of the Rosy Cross in 1915. It may come as no surprise that many well-known names in esoteric circles had a fraught relationship with Waite, including Aleister Crowley. However, he did have friends, including author Arthur Machen.

Waite wrote a myriad of books on the occult, from divination to ceremonial magic and alchemy. The peak of his fame came with the act of co-creating the Rider-Waite Tarot, released in 1909 and famously illustrated by Pamela Colman Smith. The accompanying text, *Key to the Tarot*, was later reworked and entitled *Pictorial Key to the Tarot*.

Waite authored many books, a number of which – including the *Book of Ceremonial Magic* – remain in print and are still used by followers of the esoteric arts today.

Waite's translation of works like *The Book of Hermes*, Chapter XXII, shows his approach was a way of connecting with the divine rather than a means to magical power

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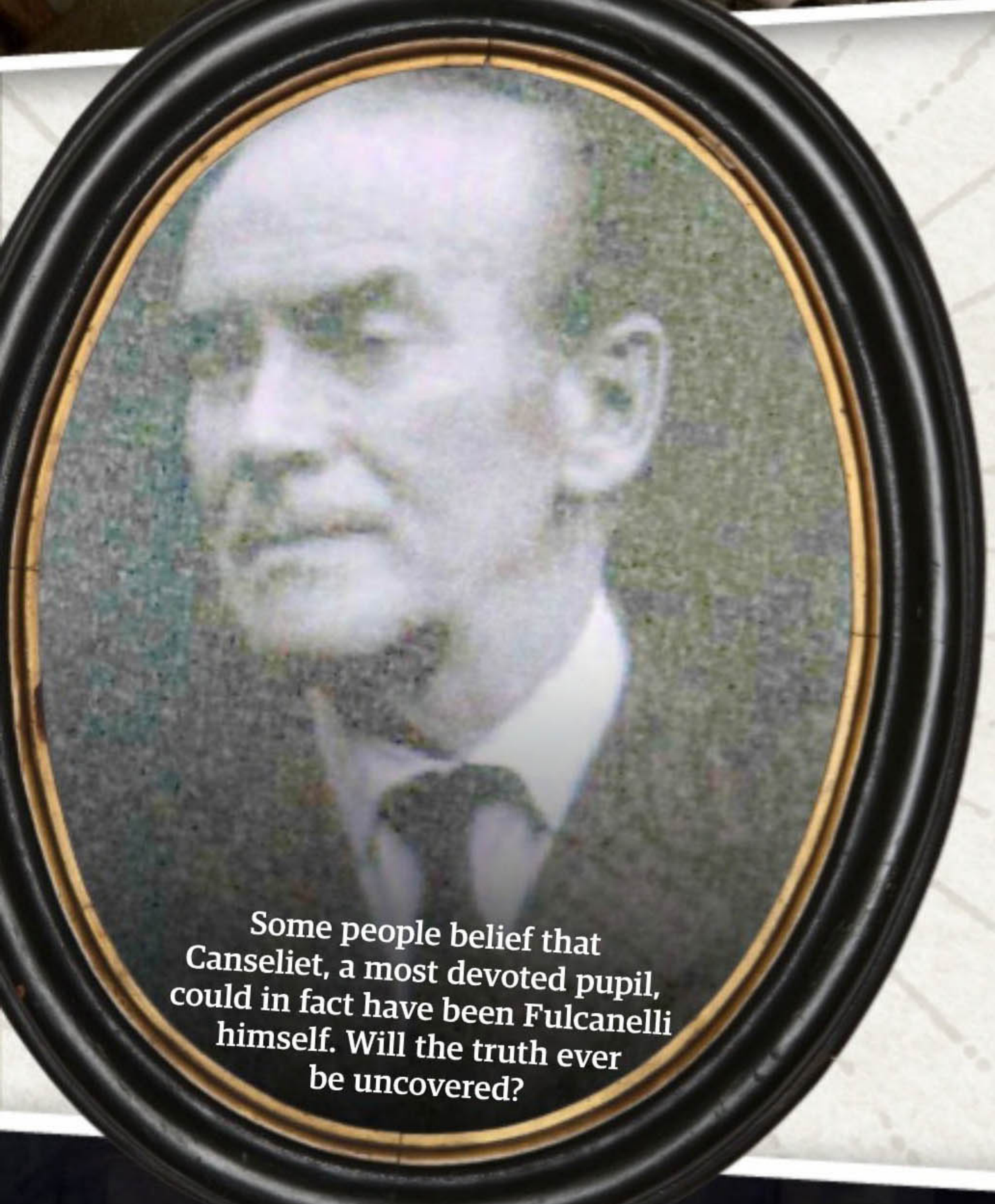
The frontispiece of Fulcanelli's most important work, *Mystère des Cathédrales*, with an introduction by his assistant, Canseliet, and illustrated by Julien Champagne

Fulcanelli

While little is known about the mysterious esoteric author, either a man or legend, the craze for this modern-day alchemist has become a cultural phenomenon

Written by Dee Dee Chainey

'Fulcanelli' is a mixture of 'Vulcan', Roman god of fire, with either 'Elijah', an Abrahamic prophet, or 'El' – the Canaanite name for God – the sacred fire



Some people belief that Canseliet, a most devoted pupil, could in fact have been Fulcanelli himself. Will the truth ever be uncovered?

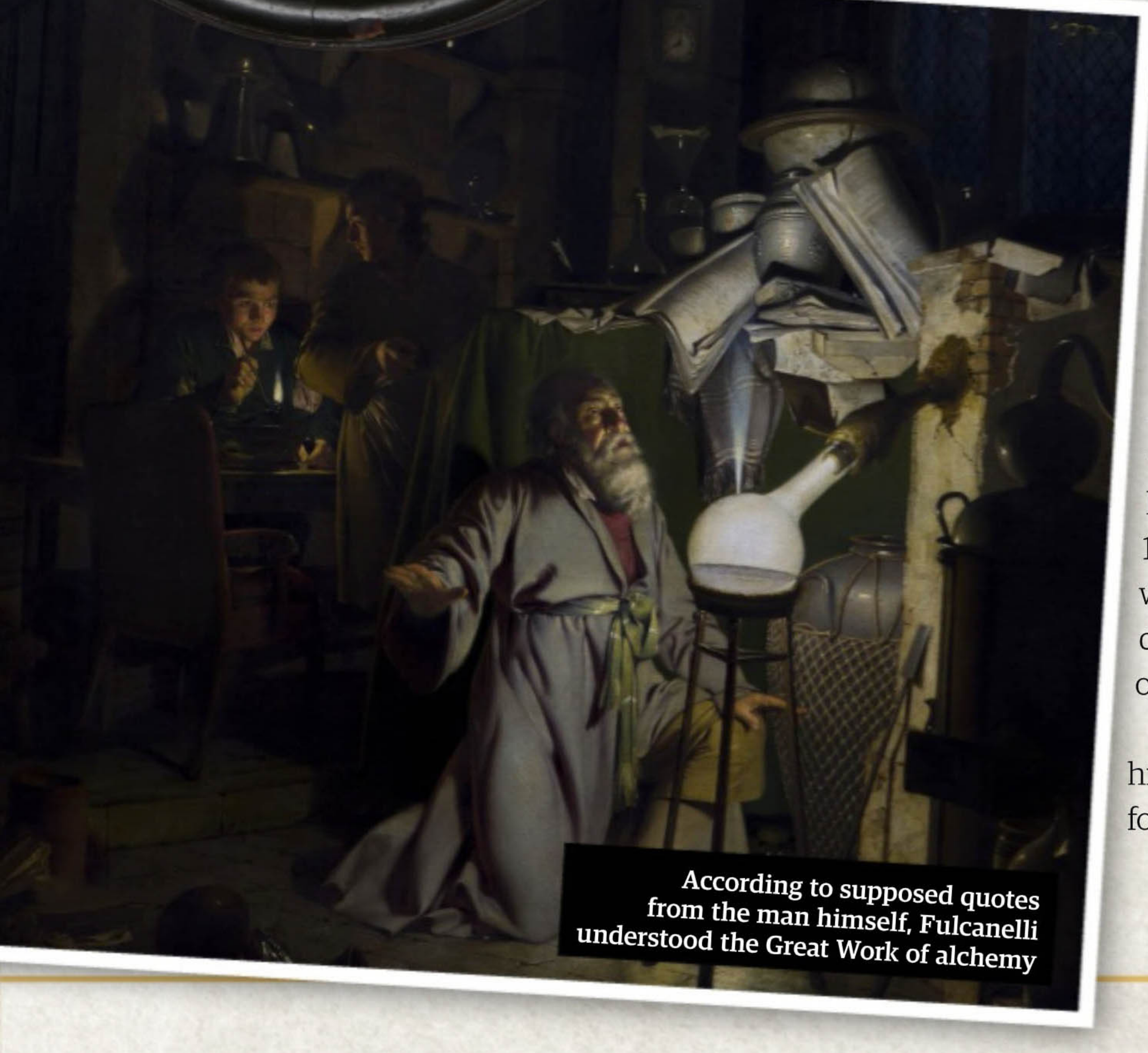
Like so many legendary historical figures, Fulcanelli's real identity is shrouded in mystery. It is likely that he was French, and some claim he was born in the first half of the 19th century, in 1839. His works can unquestionably be attributed to someone well versed in alchemy. His most elaborate claim to success is that his assistant, Eugène Canseliet, transformed lead into gold in the presence of witnesses, attaining the alchemist's dream. Fulcanelli is said to have disappeared in the 1920s after imparting his knowledge to his assistants. Some say he survived World War II, only to disappear after the Liberation of Paris in 1944. Canseliet claimed that his master appeared to him a final time in Seville in 1953, asking, "Do you recognise me?" He reports in his writings that the man appeared 20 years younger than the last time he'd seen him, yet would have been over 100 at this stage, meaning he was thought to have finally discovered the secret of immortality.

Many theories unveiling his true face have been put forward: from an array of French occultists, to a member of the former French royal family, to the Count of Saint-Germain – an 18th century alchemist also thought to have gained immortality. Some suggest that Canseliet may have been the man himself, or even his illustrator, Jean-Julien Hubert Champagne, himself an occultist.

Others suggest that Fulcanelli is the pen name of a collective: the Frères d'Heliopolis, including Canseliet, Champagne, and either the occultist and Freemason, Jules Boucher, or Pierre Dujols, a librarian from Paris.

His two existing books – published after his disappearance in the 1920s – were *Le Mystère des Cathédrales*, and *Les Demeures Philosophales*. Both attempt to uncover the alchemical symbolism of important monuments like Notre-Dame Cathedral, and comment on the scientific and alchemical knowledge of the Middle Ages and Renaissance. Arcane and full of Greek and Latin puns, it is obvious that the books intended to exclude anyone without a firm grounding in alchemy. They were initially published in a small print run of 300, yet the works gained popularity after their reprinting in the 1950s and 60s. Soon, the craze around the mysterious disappearing alchemist began. Notes for a third book were rumoured, *Finis Gloriae Mundi* – entrusted, once more, to Canseliet; apparently Fulcanelli decided that the time was never right for publication. Another title of the same name, published by Jean-Marc Savary in 1999, and signed 'Fulcanelli', was widely believed to be a counterfeit.

Fulcanelli is alleged to have appeared in Paris in 1937 to warn an acquaintance about the dangers of nuclear weaponry



According to supposed quotes from the man himself, Fulcanelli understood the Great Work of alchemy

Images source: Getty, Wiki

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